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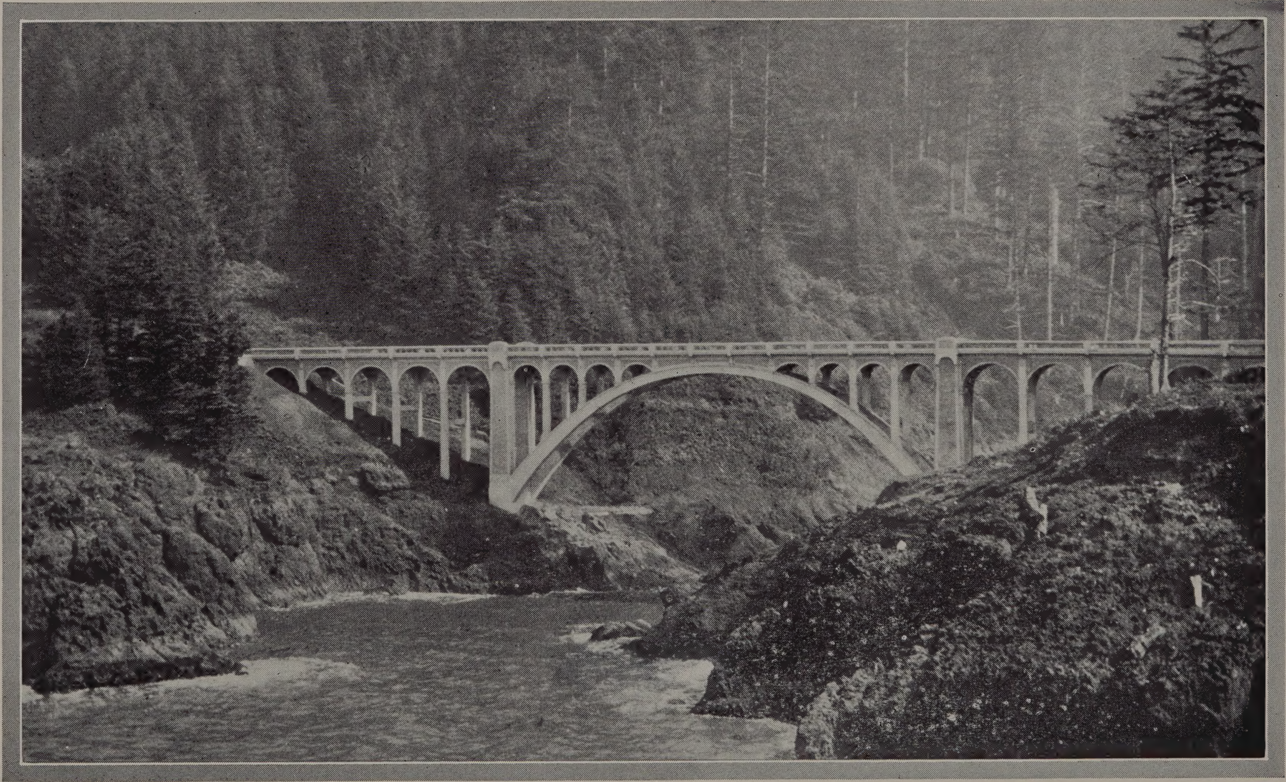
STATE OF OREGON

REPORT
STATE HIGHWAY COMMISSION

1929-1930



ROOSEVELT COAST HIGHWAY CROSSING OF ROCKY CREEK, TEN MILES NORTH OF NEWPORT

Ninth Biennial Report

OF THE

Oregon State Highway Commission

Covering the period December 1, 1928,
to September 30, 1930

OREGON STATE HIGHWAY COMMISSION

H. B. VAN DUZER, Chairman.

C. E. GATES, Commissioner; M. A. LYNCH, Commissioner

ROY A. KLEIN, State Highway Engineer

SALEM, OREGON:
STATE PRINTING DEPARTMENT
1930

OREGON STATE HIGHWAY COMMISSION

FORMER MEMBERS AND TERMS

E. J. ADAMS, Eugene, Feb. 28, 1917, to March 31, 1918.

W. L. THOMPSON, Pendleton, Feb. 28, 1917, to Oct. 15, 1919.

S. BENSON, Portland, Feb. 28, 1917, to Nov. 15, 1920.

J. N. BURGESS, Pendleton, Oct. 16, 1919, to Nov. 21, 1919.

E. E. KIDDLE, Island City, Nov. 26, 1919, to Dec. 28, 1920.

R. A. BOOTH, Eugene, April 1, 1918, to May 28, 1923.

J. B. YEON, Portland, Nov. 22, 1920, to March 31, 1923.

W. B. BARRATT, Heppner, Jan. 8, 1921, to March 27, 1923.

WM. DUBY, Baker, March 27, 1923, to July 31, 1927.

W. H. MALONE, Corvallis, May 28, 1923, to March 31, 1927.

ROBERT W. SAWYER, Bend, Aug. 1, 1927, to May 28, 1930.

PRESENT MEMBERS

H. B. VAN DUZER, Portland, appointed April 1, 1923,
reappointed April 1, 1926,
reappointed April 1, 1929.

C. E. GATES, Medford, appointed April 1, 1927,
reappointed April 1, 1930.

M. A. LYNCH, Redmond, appointed May 29, 1930.

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LETTER OF TRANSMITTAL

SALEM, OREGON, October 1, 1930.

HONORABLE A. W. NORBLAD,
Governor of the State of Oregon.

Dear Sir: In compliance with section 4432, title XXX, Oregon Laws, we have the honor to submit herewith the report of the Oregon State Highway Commission for the period December 1, 1928, to September 30, 1930.

Respectfully submitted,
OREGON STATE HIGHWAY COMMISSION
H. B. VAN DUZER, Chairman,
C. E. GATES, Commissioner,
M. A. LYNCH, Commissioner.

Ninth Biennial Report

OF THE

State Highway Commission

OF THE

State of Oregon

1929-1930

PART ONE

The purpose of this report is to review briefly the work accomplished during the biennial period in advancing the state highway program. Included will be found financial statements in detail showing funds received into and disbursed from the state highway fund. The period covered is from December 1, 1928, to September 30, 1930; 22 months.

Previously, beginning with the inauguration of the state highway program in 1915, the fiscal year for the department has ended on November 30 each year, and previous reports have been closed on that date. This fiscal period is out of line with general practice and does not harmonize with that of other departments of the state government. Also, the time left after closing the accounts on November 30 is insufficient to prepare the complete report and have it in printed form prior to the legislative session. Therefore, it seemed advisable to change the fiscal year to the calendar year, which has been done. For that reason, the 1929 figures given in this report cover the period from December 1, 1928, to December 31, 1929, 13 months, while the 1930 figures cover the period from January 1, 1930, to September 30, 1930, nine months only. The early closing on September 30 is necessary in order to have sufficient time to prepare and print the report. The complete figures for the whole calendar year 1930 will be shown in the next report.

The completed program for the biennium totals 24.92 miles of pavement, 231.49 miles of bituminous macadam, 377.69 miles of oiled macadam, 226.99 miles of non-skid treatment of pavement, 124.87 miles of crushed rock or gravel surfacing, 255.77 miles of crushed rock or gravel resurfacing, 273.70 miles of grading, and 195.61 miles of grade widening. The forest highway construction as reported by the United States Bureau of Public Roads is 31.88 miles of crushed rock or gravel surfacing, 43.84 miles of grading and 5.51 miles of grade widening.

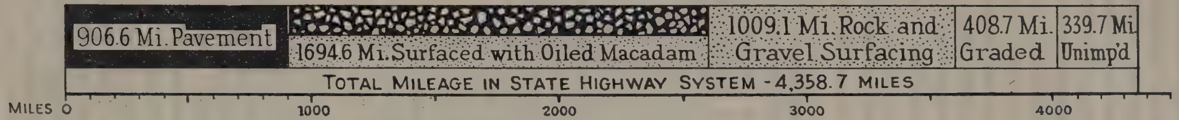
The total amount expended through the state highway fund in this period, including cooperative county payments, but excluding market road apportionments, is $22,458,936.51, of which state funds total $20,173,762.21; county, $717,959.13; miscellaneous sources, $15,348.63; and federal aid, $1,551,866.54. Of the state funds, the sum of $6.671,893.17 has been used for the payment of principal and interest on the bonded indebtedness. Included in the above state funds, there is $606,986.98 of state funds expended for forest highways, to which was added $132,000.00 of county cooperative funds and $832,437.29 of government forest highway funds, making a total forest highway expenditure on state highways of $1,571,424.27. Forest highway funds are expended under the supervision of the United States Bureau of Public Roads, and the federal and county funds do not pass through the state highway fund.

The close of the year 1930 rounds out the fourteenth year since the adoption of the state highway plan and program of 1917. In that period, highway improvements have followed each other in rapid succession in all parts of the state until at the present time on the state highway system of 4,359 miles, 4,019 miles have been improved and only 340 miles remain unimproved. The work done by the Commission to date consists of 739.4 miles of paving, of which 188.4 miles are of the cement concrete type and 551.0 miles are of the bituminous type; 339.1 miles of bituminous macadam; 1,572.1 miles of oiled macadam; 239.7 miles non-skid treatment of pavement; 2,472.0 miles of rock or gravel surfacing; 54.0 miles of repaving; 708.8 miles of resurfacing and 337.2 miles of regrading. These figures do not include the forest roads on the state system, which are constructed under the supervision of the United States Bureau of Public Roads, which reports a total of 474.17 miles of crushed rock or gravel surfacing, 546.80 miles of grading and 27.21 miles of regrading. Also, there has been constructed on the state highway system within the Crater Lake National Park 3.0 miles of bituminous macadam and 12.0 miles of oiled macadam, this work having been financed by a special appropriation of the Federal Government. In addition, there are some counties which have graded or improved sections of state highway with their own forces or by contract, of which this department does not have a record. To be added to the total, also, are the state highways within Multnomah County and through incorporated cities of more than 2,000 population, which have done their own work without assistance from the state. Considering the added mileages, but noting the fact that graded roads have been rock surfaced, and rock surfaced roads have been paved and oiled, the present status of the state highway system is: 906 miles of pavement, 20.8 per cent; 324 miles of bituminous macadam, 7.4 per cent; 1,371 miles of oiled macadam, 31.5 per cent; 1,009 miles of crushed rock or gravel surfacing, 23.1 per cent; 409 miles graded and ready for surfacing, 9.4 per cent; 340 miles unimproved, 7.8 per cent. There have been 558 bridges of standard design over 20 feet in length constructed by the department on state highways during the 14-year period of its activities.

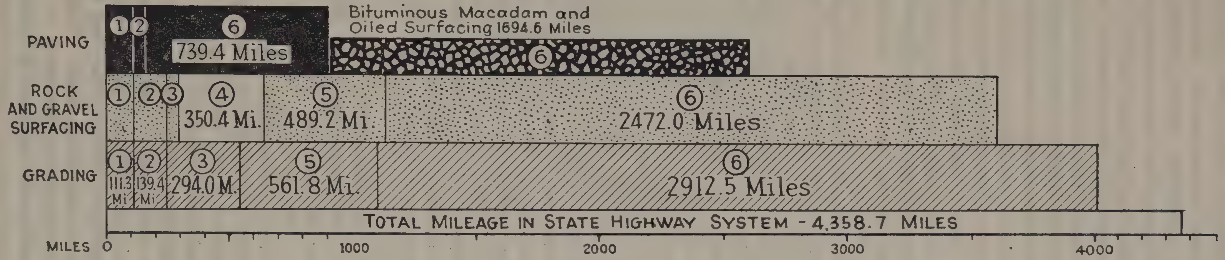
The gross expenditures of the Commission, not including market roads, over the 14-year period, have been $141,992,545.74, of which $14,596,140.76 is county funds, $13,222,242.93 government funds, $563,629.04 funds from miscellaneous sources, and $113,610,533.01 state funds. Of state funds, the sum of $29,241,988.71 has been used in the payment of principal and interest on bonded indebtedness.

CHART SHOWING PROGRESS IN STATE HIGHWAY IMPROVEMENT

I. State of Improvement Dec. 31, 1930



II. Mileages of various classes of work performed in bringing the State Highway System to its present state of improvement.



1. Work done by Multnomah County and City of Portland (111.3 miles pavement, 111.3 miles rock surfacing and 111.3 miles grading.
2. Work done by incorporated cities outside of Multnomah County (55.9 miles pavement, 139.4 miles rock surfacing and 139.4 miles grading.)
3. Work done by counties other than Multnomah County (48.0 miles rock surfacing and 294.0 miles grading.)
4. This space represents sections of highway which were not surfaced with rock or gravel prior to paving
5. Work done by Federal Government in National Forests and National Parks. (Park work consists of 3.0 miles bituminous macadam, 12.0 miles oiling, 15.0 miles rock surfacing and 15.0 miles grading)
6. Work done under direct supervision of State Highway Commission.

This Commission has continued the well-established policies of its predecessors, and the construction program of the biennium has consisted in a large measure of completing unfinished contracts carried over from the previous year, placing under contract units in uncompleted gaps of main through highways and extending branch highways and connections as fast as funds were available, so that the public might secure the maximum benefit from the improvement. The policy of surfacing graded roads as soon as the roadbed has become thoroughly settled has been followed consistently.

It has been the Commission's plan to award contracts in the late summer and fall for work to be done during the following construction season relying on the next year's funds to pay for the project. This practice has the advantage of giving the contractor an opportunity to do some of his work in the winter and thus increase the length of the working season. It also provides some winter employment and makes possible an early start in the spring when weather conditions are more favorable.

The unemployment situation caused by the business depression came to the attention of the Commission in the fall of 1929 and immediately plans were made for increasing the construction program in order to provide a measure of relief. The result was that $2,500,000 more work was placed under contract in 1929 than in 1928. Widespread unemployment continuing into 1930 was apparent and in order to anticipate a more severe condition in the fall and winter of 1930 the Commission further increased the construction program during the summer of 1930 authorizing many projects the construction of which will carry over the winter of 1930-31. It will be the policy of the Commission to continue to award further contracts during the fall months for the winter's and next summer's work. Also, in order to help the unemployment situation, the Commission has instructed the Engineer to organize day labor extra gangs for work in various parts of the state to cut dangerous leaning trees and snags along the roadsides, and cut up and burn logs and brush adjacent to the highways through the timbered areas. Some work has also been provided for extra gangs in widening roadbeds and ditching operations in various parts of the state.

The outstanding features of the work of the biennium are as follows:

The Pacific and West Side Pacific Highways have been considered as completed, but betterments have been necessary. Of bridge replacements, mention is made of the new bridge completed at Myrtle Creek to eliminate a sharp curve and the new reinforced concrete through arch bridge over the Rogue River at Grants Pass which replaces a light steel structure with a narrow roadway width. Between Canemah and New Era, 4.4 miles of 20-foot concrete pavement have been laid on a new grade completed in 1929. Between Tangent and Shedd on the Pacific Highway, 2.4 miles of grade have been widened and north of Monmouth 2.8 miles of similar construction have been completed. The purpose of this improvement was to make the road safer by providing wider shoulders and eliminating deep borrow pits which filled with water during the winter season. Wide gravel shoulders were placed on the widened embankment section.

In the vicinity of Portland to connect up with the widened arterial highways in Multnomah County, three betterment projects have been undertaken. On the Pacific Highway, between the Multnomah County line and Oswego, a grade widening and realignment project, 0.92 mile in length, has been completed. On the West Side Pacific Highway, from the Multnomah County line to Middleton in Washington County, a grade widening and line revision project, including widened crushed rock shoulders, is under contract for completion in the fall of 1930. On the Tualatin Valley Highway, a 3.9 mile paving project, connecting with the new Canyon Road improvement in Multnomah County and extending west through Beaverton, has been completed. This is a 20-foot concrete pavement with wide gravel shoulders. The new location eliminates several sharp curves and, through Beaverton, is one block north of the business section, which avoids the local congestion.

Much work has been done on the Mt. Hood Highway. The section from the Multnomah County line through Sandy has been placed under contract for concrete paving and widened shoulders. In the National Forest, grade widening and alignment revision have been continued through to the Wapinitia connection, while resurfacing has been completed between Rhododendron and Government Camp.

Continued progress has been made on the Roosevelt Coast Highway. South of Newport, the Yaquina Bay-Alsea Bay Unit has been graded and the surfacing placed under contract as cooperative forest highway projects. New ferry slips have been built at both Yaquina and Alsea Bays. Between Waldport and Yachats and south to the Lane County line, the grading has been completed and the surfacing placed under contract. By the end of November, 1930, it is expected that travel may use the entire road south from Newport to the Lane County line, a distance of 28 miles. This will eliminate many miles of beach travel and avoid the danger at the crossings of Beaver Creek, Big Creek and the old elevated tramway on the north side of Alsea Bay.

North of Florence, between Sutton Lake and Berry Creek, a 3.9-mile grading unit has been placed under contract and a 5.3-mile unit in the vicinity of the Heceta Lighthouse is now being advertised by the Bureau of Public Roads as a cooperative forest highway project. This is a very scenic unit and the plans include a tunnel high above the breakers. South of the Siuslaw River, 1.2 miles of grading and a ferry slip have been completed with an additional 6.4 miles of grading under contract which carries the work to the Douglas County line. North of Gardiner an additional grading project of 3.2 miles was placed under contract in the spring of 1930, on which favorable progress has been made. All of this work, as well as the work on the units remaining uncompleted, is heavy, expensive work and cooperative county and federal funds are necessary to supplement the state funds.

At the present time there remains incomplete and not under contract in Lane County, 8.2 miles, exclusive of the Heceta Unit under agreement with the Government, and 4.4 miles in Douglas County. Cooperative plans are being worked out, however, with each county and it is confidently expected that all of the grading on these units will be placed under contract before the close of the calendar year 1930 and completed by the end of 1931. There are many small bridges which will be placed under contract early in 1931 and surfacing contracts will be let in the fall of 1931, so that it is expected that the entire road will be open for travel in the late summer of 1932.

There are six major waterways crossed by the Roosevelt Highway. Beginning at the north, these are Yaquina Bay, Alsea Bay, Siuslaw River, Umpqua River, Coos Bay and Rogue River. A bridge is now being constructed at Rogue River, but it is thought that because of the expensive structures required it will be necessary to maintain ferry service across the five remaining waterways for some time.

The new Klamath Falls-Lakeview Highway is now open to travel throughout its entire length, grading and surfacing on the last remaining unit east of Dairy having been completed.

On the Fremont Highway, further progress has been made on the north and by grading from The Dalles-California Highway Junction, through the Fremont National Forest, to Silver Lake town and along the old shore line of Silver Lake to the foot of Picture Rock Pass. There remains now only a 5.5-mile gap between the north side of Picture Rock Pass and Ana Spring which is a serviceable road but which has not been graded to standard. South of Lakeview, the entire length to the California state line has been graded and surfaced.

Appreciable progress has been made on the Mitchell-Dayville Unit of the Ochoco Highway. All of the grading is to be completed before the close of the calendar year. Eighteen miles of surfacing is under contract east of Mitchell, leaving 14.1 miles yet to be surfaced, which it is expected, will be placed under contract early in the next season, affording an all-year, surfaced, through connection between Redmond and Dayville in the fall of 1931.

The remaining units of the Central Oregon Highway between Bend and Burns have been completed with the exception of one 10.7-mile section now under contract. In addition to the 27 miles graded with state forces in 1927-28 between Millican and Hampton, 50.2 miles were graded with state forces in 1929-30, and 15.2 miles were done under contract. East of Bend, 10.7 miles have been regraded and 18 miles surfaced. From Burns west to the new Hines Lumber Mill, 2.7 miles, the grade was widened and resurfaced and covered with bituminous macadam. From Hines Mill west to Sage Hen Hill, 13.1 miles were surfaced and later oiled.

On the McKenzie Highway, the grading and surfacing of the Springfield-Cogswell Hill Unit, 7.4 miles, has been completed and grading well advanced on the next unit to the east which will carry the improvement to Doyle Hill. Work on these units has been closely coordinated with the new Leaburg power development built by the Eugene Water Board who have shown a very fine spirit of cooperation in the handling of joint problems encountered in this construction. Approaches on new alignments to the new bridges at Gate Creek, McKenzie Bridge and Blue River have been graded. Between Nimrod and Belknap Springs road junction, a contract for resurfacing is partially completed. The Santiam Highway has been extended 1.9 miles east of the Ranger Station east of Cascadia and surfaced between Lebanon and Shea's Hill.

Substantial betterment projects have been included in the program to meet the needs of increased and faster moving traffic as well as to provide greater safety. These improvements have been in the form of widened roadbeds and surfacing, wider roadways on structures, improved alignment with less curvature and flatter curves with greater sight distance. Among the more important should be mentioned three sections on the Old Oregon Trail: Kamela to Hilgard in Union County, Baker-

THREE VIEWS ON THE NEWLY-WIDENED AND REGRADED SECTION OF THE PACIFIC HIGHWAY BETWEEN CANEMAH AND NEW ERA

Durkee in Baker County, and 18 miles in northern Malheur County; also the Pioneer Mountain-Eddyville Unit of the Corvallis-Newport Highway, the Keene Creek-Keno Unit of the Green Springs Highway, the Neskowin-Otis and the Denmark-Port Orford Units on the Roosevelt Coast Highway. All of these projects include both grade widening and resurfacing. On the Lower Columbia River Highway, three miles of new grade has been constructed, including new structures, between Rock Creek and Gnat Creek, preparatory to paving. South of Medford on the Pacific Highway, 5.9 miles of 16-foot concrete paving has been widened by adding two-foot concrete shoulders on each side and covering the old pavement with asphaltic concrete.

Among the larger and more important bridges completed should be listed Willamette River bridge at Springfield, Umpqua River bridge at Scottsburg, Malheur River bridge west of Vale and Tualatin River bridge north of Tigard. Mention should also be made of two bridges on the McKenzie Highway, one over the McKenzie River and one at Gate Creek; also bridges over the Skipanon and Necanicum Rivers and Wahanna Creek on the Roosevelt Coast Highway in Clatsop County. Other completed bridges are the crossing of the Grande Ronde River near La Grande in Union County and the Klamath River bridge at Keno. Of bridges under contract but not completed, there should be listed among the larger, the Wilson River bridge north of Tillamook and the Rogue River bridge at Grants Pass. The standard width of roadway on bridges is now 24 or 27 feet between curbs, dependent on amount of traffic. On all bridges near cities and at other locations where they are used by pedestrians, sidewalks are included. Many bridges have been designed and construction supervised, for the counties.

The largest bridge structure yet undertaken by the Commission is the reinforced concrete arch bridge across the Rogue River on the Roosevelt Coast Highway between Gold Beach and Wedderburn. The structure consists of seven 230-foot arch spans and 328 feet of approach, with a roadway width of 27 feet and two sidewalks. This contract was let on January 16, 1930, and the completion date is December 31, 1931. The contract price is $568,181. Scheduled progress has been maintained during the current season, all of the foundations of the river piers having been completed. The unusual features of the design will be of much interest to engineers throughout the country. Federal aid is being secured on this bridge.

There has been one change in the personnel of the Commission during the biennium. M. A. Lynch of Redmond was appointed May 29, 1930, to succeed Robert W. Sawyer of Bend. C. E. Gates was reappointed April 1, 1930. H. B. Van Duzer was reappointed April 1, 1929, and has continued to serve as Chairman. Roy A. Klein is State Highway Engineer and Secretary to the Commission.

During the biennium, 35 meetings occupying 39 days have been held. One of these was held with the Washington Highway Committee relative to the Interstate Bridge at Vancouver, and five were highway improvement district hearings. The regular meetings are held once each month in the Multnomah County Courthouse in Portland, the county officers granting free use of one of the court rooms, for which the Commission is greatly indebted. Many delegations from all parts of the state have attended these meetings as well as a large number of county officials, bidders and others interested, so that these accommodations are found very convenient.

Bids have been invited on 191 state projects and 11 county projects. County projects have been advertised at the request of the county courts, since it is thought that in this way greater competition can be secured, and the Commission is glad to accommodate them in this respect. Of the 191 state projects, no bids were received on one, and on 11 the bids were rejected because they were in excess of the engineer's estimates and readvertised with the result that lower figures were secured at the following letting. On three projects, the low bidders defaulted and the projects were readvertised. The total number of bids received on state projects was 1,427, or an average of seven bids on each project; the largest number of bids on any one project was 21.

The total number of state contracts awarded during the two-year period was 176, which vary greatly, of course, in size and value. A complete statement of dates of award, descriptions of projects, names of successful bidders, numbers of bids, etc., will be found in an accompanying table.

Close competition among the bidders is found and in most cases there is only small difference between the low bid and the next higher. While bids have been generally low and below the engineer's estimates, there have been but few jobs on which it has been necessary to call in the sureties to finish the work. While some cases of losses have been reported, it may be fair to assume that the majority of the contractors are making a fair profit, which is as it should be. As may be expected, many of the same contractors are bidding year after year, with some new entries and some withdrawals.

A study of comparative bid prices on the contracts awarded over the past few years will indicate a downward trend, particularly in prices for crushed rock or gravel surfacing. This may be accounted for by the fact that better crushers have been placed on the market; cheaper power is obtained from Diesel engines or electric installations; plants of greater capacity are being set up; improved screens have appeared on the market; and mechanical loading is being used more extensively. It has been necessary in many cases to install a water supply and wash materials to secure clean rock or gravel for oiling and bituminous macadam work.

In grading work, the increased use of small gas shovels, pneumatic, dual-tired hauling trucks, tractors with large, hydraulic operated fresno scrapers, and universal use of portable air compressors has reduced costs materially when compared with team, track and car or manual methods. In bridge construction, many economies have been effected by standardization of many details.

Paving prices have shown a decline despite the fact that additional refinements have been added. Our specifications now require that all concrete aggregates be weighed rather than proportioned by volume. Weighing devices are also required on all concrete bridge jobs. Finishing machines are now specified for both concrete and asphaltic pavements. Both of these specifications improve the quality of the work and are welcomed by the contractors.

It has been the policy of the Commission to place under contract all work which could be handled in that manner, and this policy has been consistently followed in all new construction such as grading, surfacing, paving and bridges, also in furnishing maintenance materials, such as crushed rock or crushed gravel. On the other hand, work which could not be handled in this manner, such as general patrol, weed cutting, snow removal, scarifying, shaping, blading, road oiling, etc., which classifies as maintenance work, has been handled entirely by state forces.

Federal aid allotments have greatly augmented state funds in carrying out the state highway program. However, these government funds may only be expended upon the Federal Aid System which comprises about 7 per cent of the public road mileage of the state or 3,227 miles, and is limited to the interstate highways and more important through routes within the state.

In 1928, Congress passed the Oddie-Colton Bill, S. 1341, which permitted certain of the western states, including Oregon, to increase the mileage of their Federal Aid System to the extent of the mileage on the present Federal Aid System in National Forest reserves, Indian reservations and other Federal reservations. At a meeting on November 21, 1928, the following highways were submitted to the Secretary of Agriculture for inclusion in the Federal Aid System, totaling 368.4 miles: Central Oregon Highway, from a junction with The Dalles-California Highway in the city of Bend to Burns, county seat of Harney County; Corvallis-Newport Highway, from a junction with the Roosevelt Coast Highway at Newport to a junction with the West Side Pacific Highway at Corvallis; Mt. Hood-Wapinitia Highway, from the city of Portland to a junction with The Dalles-California Highway near Maupin via Sandy and Government Camp; Salmon River Highway, from a junction with the Roosevelt Coast Highway near Otis to a junction with the McMinnville-Tillamook Highway at Valley Junction; Siuslaw Highway, from a junction with the Roosevelt Coast Highway near Florence to a junction with the West Side Pacific Highway near Junction City. Approval was received in the early part of 1929, and these projects have since been treated as part of the Federal Aid Highway System.

On May 3, 1929, the Commission requested the Bureau of Public Roads to approve a location between Oregon City and Portland on the east side of the Willamette River as a part of the Federal Aid System. Approval was subsequently received. A survey of the roads was made by the County Engineer of Clackamas County under the supervision of the State Highway Engineer. The location as adopted by the Commission June 26, 1930, provides for a high standard, direct alignment, through traffic highway. Options for a right of way 120 feet in width have been taken by the Clackamas County Court.

Originally, the Federal law required 50 per cent cooperation by the states, but a later change gave an advantage to the states having large areas of public lands by providing that the cooperation could be reduced in certain proportions. Under this amendment, Oregon is required to cooperate 37.77 per cent. There is a limiting factor, however, as to the maximum Federal aid expenditures per mile, excluding bridges of over 20-foot span, which, applied to Oregon, gives a maximum allotment of $18,669 of Federal funds per mile. In many instances where heavy and expensive grading is included in an improvement, together with surfacing or pavement, the per mile limitation of Federal funds makes necessary a much greater proportion of state funds. There has been some sentiment in Congress to either increase the present per mile limitation or remove it altogether. Either procedure would be very helpful to this and all the other states.

The total amount of Federal Aid Appropriations for many years has been $75,000,000 divided among all of the states, of which Oregon's share in 1930 was $1,191,989. At its last session, Congress increased the Federal Aid Appropriation to $125,000,000 for the fiscal years 1931, 1932 and 1933. Oregon's share was increased thereby for the government fiscal year ending June 30, 1931, to the sum of $1,996,112. A like amount will be available also for the fiscal years 1932 and 1933 which will be a material help in advancing the state highway program. To show its appreciation of increased Federal Aid Appropriations, the Commission expanded its program and by July 24, 1930, had obligated by contracts all of the Federal Aid funds for the fiscal year ending June 30, 1931. As a measure of relief for the benefit of the Middle States affected by drought, but applying to all of the states, the Secretary of Agriculture authorized the obligation of 1932 fiscal year funds beginning September 1, 1930, but not payable until the first of July, 1931. Taking advantage of this situation, Oregon has already obligated part of these 1932 Federal funds.

FEDERAL FUNDS ALLOTTED TO OREGON FOR COOPERATIVE WORK

	For Federal Aid Projects	For Forest Roads	Totals
Act of July 11, 1916, available July 11, 1916, to June 30, 1926	$ 1,181,416.50	$ 1,312,449.00	$ 2,493,865.50
Act of Feb. 28, 1919, available Feb. 28, 1919, to June 30, 1921	3,150,761.76	596,681.00	3,747,442.76
Act of Nov. 9, 1921, available Nov. 9, 1921, to June 30, 1923	1,182,663.90	1,157,109.00	2,339,772.90
Act of June 19, 1922, available July 1, 1922, to June 30, 1925	2,991,316.84	906,488.00	3,897,804.84
Reapportionment of funds, available July 1, 1925, to June 30, 1926	10,575.00	----------	10,575.00
Distribution of "Special Funds"	----------	561,694.89	561,694.89
Act of Feb. 12, 1925, available July 1, 1925, to June 30, 1927	2,362,613.00	1,162,883.00	3,525,496.00
Act of June 22, 1926, available July 1, 1927, to June 30, 1929	2,371,909.00	1,202,513.00	3,574,422.00
Act of May 26, 1928, available July 1, 1929, to June 30, 1931	2,389,656.00	1,264,625.00	3,654,281.00
Act of April 4, 1930, available July 1, 1930, to June 30, 1933	*4,796,014.00	*3,302,208.00	*8,098,222.00
Reapportionment of funds, available July 1, 1930, to June 30, 1931	5,357.00	----------	5,357.00
Total funds authorized	$20,442,283.00	$11,466,650.89	$31,908,933.89
Total funds alloted	18,442,283.00	8,866,650.89	27,308,933.89
Less expenditures and obligations to complete present contracts and agreements	16,128,531.31	8,273,639.69	24,402,171.00
Unobligated balance (September 30, 1930)	$ 2,313,751.69	$ 593,011.20	$ 2,906,762.89

* Approximate amounts. Definite allotments for period July 1, 1932, to June 30, 1933, have not yet been made.

Supplementing the Federal Aid Act, appropriations have been made by the Federal Government for the construction of roads within, partly within, or adjacent to the National Forests. This appropriation is divided into two parts; one for forest highway work, which is applicable to state highways or important county and community roads; and the other for roads and trails for forest development. Under the law, the forest highway projects are programmed each year by an agreement between the Bureau of Public Roads, Forest Service and State Highway Commission. The roads and trails portion of the fund is allotted by the Forest Service officers.

Cooperation is not required on forest highways, but state funds have always been added to expedite the forest highway program. During the present biennium, substantial cooperation has been furnished by Lane and Umatilla Counties on projects within their borders. Forest highway projects are handled by the District Engineer of the Bureau of Public Roads who makes the surveys, takes bids and supervises construction.

Along with the increase in Federal Aid funds, forest highway funds have been increased in the same proportions; i. e., from $7,500,000 to $12,500,000, the increase applying to the fiscal years 1931, 1932 and 1933. Due to the fact that the amount applying to roads and trails is limited to $3,000,000, the additional appropriation increases the forest highway allotment to the State of Oregon very materially.

The forest highway projects completed have increased the improved mileage on the forest highway system as well as substantially advancing the state highway program. Many projects not on the state highway system will be of great help to the counties in connecting with and supplementing their county road systems. The completion of the surfacing on the Wapinitia Highway completes that road through the National Forest and opens up the entire road for through travel. Two contracts have completed the grading of the Fremont Highway through the Fremont Forest.

Two contracts for grading and one for surfacing have advanced the Yaquina Bay-Alsea Bay Unit of the Roosevelt Coast Highway well toward completion, likewise grade widening on the Oregon Caves Road from Sucker Creek to the Caves has been completed. The most costly forest highway project to be undertaken was the Cushman-Rainrock Section of the Siuslaw Highway. The first unit to be opened up was the part involving railroad encroachments. Splendid progress has been made on this project during the 1930 season. Grade widening on the Mt. Hood Highway, begun in preceding years at the west forest boundary, has now been carried to the Wapinitia Highway junction.

Worthy of note is the continued program of grading and surfacing of the Salmon River Highway sufficient to open up that road for through travel, which is much appreciated since it shortens the distance to some of the beach resorts. Progress on the Willamette Highway has been maintained by a 13.4-mile unit of surfacing. A 4.0-mile unit has been placed under contract for grading on the Santiam Highway between Black Butte and Suttle Lake. To advance the Pendleton-John Day Highway, two grading units have been placed under contract between Ukiah and Dale. On the Roosevelt Coast Highway, arrangements have been made for a 5.3-mile grading unit between Berry Creek and China Creek which includes the scenic Heceta Head section.

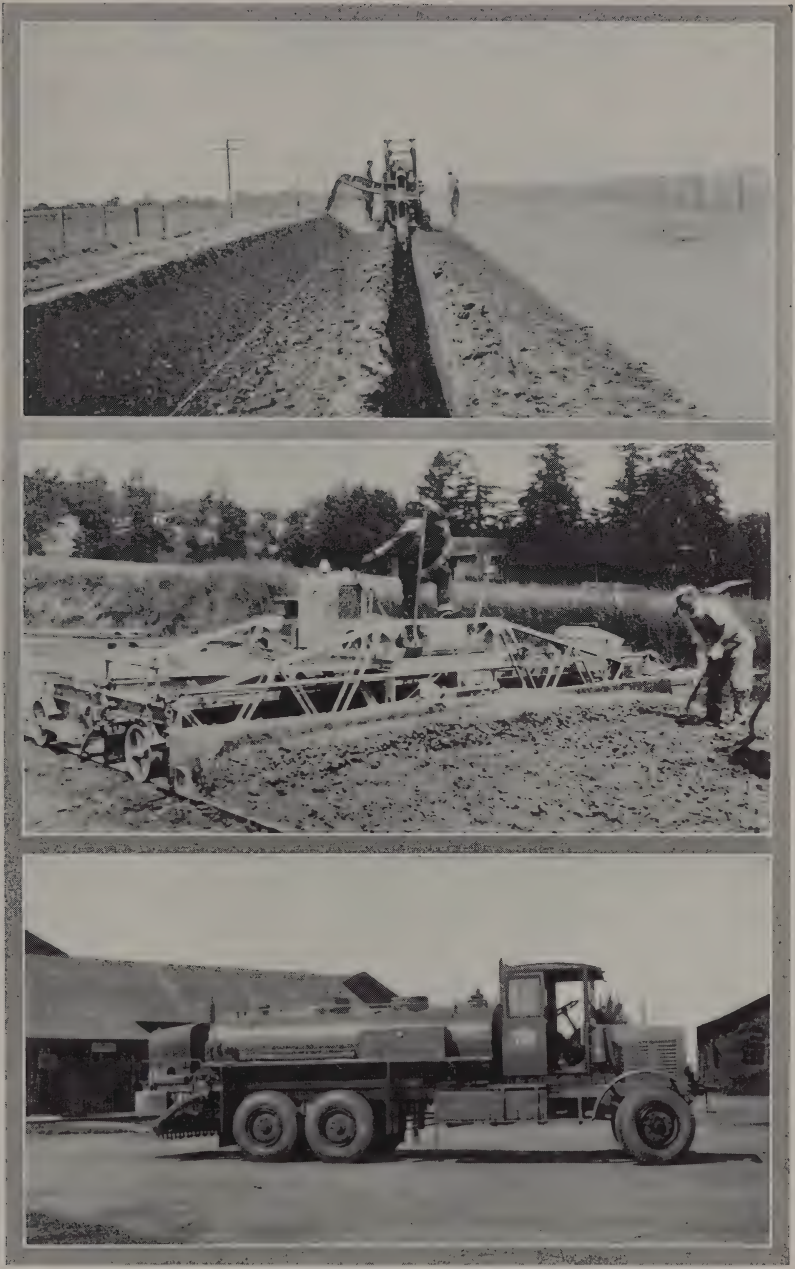
Other forest highway projects not on the state highway system should be noted; the grading and surfacing of parts of the Heppner-Spray road, 5.6 miles of grading and surfacing on the Toll Gate-McDougal Camp Section of the Weston-Elgin road, also several units of the Canyon City-Burns road which are rapidly bringing that road to a state of completion.

The bonded indebtedness has been reduced by the payment of $1,825,000 principal in 1929 and $1,925,000 in 1930, reducing the total outstanding indebtedness at this writing to $28,966,750. To match the additional Federal aid offered in 1930 and carry on an equalized program on highways not on the Federal Aid System, it has been necessary to provide additional financing through the further sale of bonds. Arrangements have been made, therefore, to sell $1,500,000 of 4¼ per cent bonds on October 30, 1930. The accompanying table has been prepared showing annual interest and principal payments for the life of the bonds including the above issue. It will be noted that the peak is to be set in 1931 with a total sum of $3,361,522.18 required to cover interest and maturities for that year.

STATE HIGHWAY BONDED INDEBTEDNESS ACCOUNT

Year	Annual Principal	Annual Interest	Annual Total	Bonds Outstanding at end of year
1917	$	$ 5,000.00	$ 5,000.00	$ 1,400,000.00
1918		72,900.00	72,900.00	2,840,000.00
1919		141,099.99	141,099.99	10,140,000.00
1920		503,725.00	503,725.00	19,140,000.00
1921		974,870.83	974,870.83	30,700,000.00
1922	125,000.00	1,521,266.67	1,646,266.67	36,075,000.00
1923	179,750.00	1,742,150.00	1,921,900.00	38,395,250.00
1924	334,500.00	1,824,240.00	2,158,740.00	38,060,750.00
1925	3,797,000.00	1,799,267.05	5,596,267.05	37,263,750.00
1926	1,197,000.00	1,722,761.65	2,919,761.65	36,066,750.00
1927	1,600,000.00	1,663,215.87	3,263,215.87	34,466,750.00
1928	1,750,000.00	1,586,060.99	3,336,060.99	32,716,750.00
1929	1,825,000.00	1,503,578.47	3,328,578.47	30,891,750.00
1930	1,925,000.00	1,418,314.70	3,343,314.70	30,466,750.00
1931	1,975,000.00	1,386,522.18	3,361,522.18	28,491,750.00
1932	1,975,000.00	1,300,475.06	3,275,475.06	26,516,750.00
1933	1,975,000.00	1,209,117.54	3,184,117.54	24,541,750.00
1934	1,875,000.00	1,117,760.02	2,992,760.02	22,666,750.00
1935	1,875,000.00	1,030,402.50	2,905,402.50	20,791,750.00
1936	1,950,000.00	942,248.10	2,892,248.10	18,841,750.00
1937	1,950,000.00	851,703.06	2,801,703.06	16,891,750.00
1938	1,950,000.00	761,158.02	2,711,158.02	14,941,750.00
1939	1,950,000.00	670,612.98	2,620,612.98	12,991,750.00
1940	1,950,000.00	580,067.94	2,530,067.94	11,041,750.00
1941	1,950,000.00	489,522.90	2,439,522.90	9,091,750.00
1942	1,925,000.00	398,977.86	2,323,977.86	7,166,750.00
1943	1,870,250.00	309,932.82	2,180,182.82	5,296,500.00
1944	1,715,500.00	223,297.78	1,938,797.78	3,581,000.00
1945	1,253,000.00	147,538.99	1,400,538.99	2,328,000.00
1946	853,000.00	92,123.95	945,123.95	1,475,000.00
1947	450,000.00	57,390.80	507,390.80	1,025,000.00
1948	300,000.00	40,234.53	340,234.53	725,000.00
1949	225,000.00	28,422.01	253,422.01	500,000.00
1950	125,000.00	19,390.74	144,390.74	375,000.00
1951	75,000.00	15,140.72	90,140.72	300,000.00
1952	75,000.00	11,953.20	86,953.20	225,000.00
1953	75,000.00	8,765.68	83,765.68	150,000.00
1954	75,000.00	5,578.16	80,578.16	75,000.00
1955	75,000.00	2,390.64	77,390.64	
	$*43,200,000.00	$ 28,179,179.40	$ 71,379,179.40	
Less Short Term Refunded Bonds	3,000,000.00		3,000,000.00	
Totals	$ 40,200,000.00	$ 28,179,179.40	$ 68,379,179.40	

* Includes $1,500,000 sold October 30, 1930.



UPPER—TRENCHING FOR PERFORATED CENTER DRAIN PIPES ON HAINES-BAKER SECTION OF OLD OREGON TRAIL; CENTER—MACHINE FINISHING OF CONCRETE PAVEMENT CONSTRUCTED ON BEAVERTON-MULTNOMAH COUNTY LINE SECTION OF THE TUALATIN VALLEY HIGHWAY; LOWER—SIX-WHEELED TANK TRUCK USED TO DISTRIBUTE ROAD OILS AND HOT ASPHALT

STATUS OF STATE HIGHWAY BONDS
December 31, 1930

Authority	Sold (par value)	Matured	Balance Outstanding
State Cooperative Bonds, Chapter 175, Laws 1917	$ 1,200,000.00	$ 900,000.00	$ 300,000.00
State Cooperative Bonds, Chapter 31, Laws 1920	*6,000,000.00	2,025,000.00	3,975,000.00
Six Million Bonds, Chapter 423, Laws 1917	6,000,000.00	1,858,250.00	4,141,750.00
First Ten Million Bonds, Chapter 173, Laws 1919	10,000,000.00	2,950,000.00	7,050,000.00
Second Ten Million Bonds, Chapter 43, Laws 1920	†12,000,000.00	3,925,000.00	8,075,000.00
Seven Million Bonds, Chapter 383, Laws 1921	‡8,000,000.00	1,075,000.00	6,925,000.00
Totals	$43,200,000.00	$12,733,250.00	$30,466,750.00
Less refunded issues	3,000,000.00	3,000,000.00	
Total sold	$40,200,000.00		
Total matured and paid		$ 9,733,250.00	
Total balance outstanding			$30,466,750.00

*Includes $1,000,000.00 of refunding bonds.
† Includes $2,000,000.00 of refunding bonds.
‡ Includes $1,500,000 sold October 30, 1930.

The constitution permits issuance of bonds for state highway purposes up to four per cent of the assessed valuation of the state, which, based on the equalized valuation of $1,124,988,691.82 for 1929, would equal $44,999,547.67.

The State Park System during the biennium has been increased 3,064 acres. Of this total, 1,720 acres were donated. Park areas in various stages of completion are under way throughout the state, notably at Humbug Mountain in Curry County, a site at Hunters Creek in Curry County, park sites on Tahkenitch, Siltcoos and Woahink Lakes in Lane County, Loon Lake in Douglas County, Ecola Park in Clatsop County, and a site near Eagle Creek on the Columbia River Highway. A number of park withdrawals have been made under the Recreational Act, their completion awaiting action by the Secretary of the Interior. Exchange of private timber holdings bordering the highways within Forest boundaries are under negotiations by the Forest Service.

Notable among the donations is a recreational area of 125 acres located at Latourell Falls on the Columbia River Highway in Multnomah County, given by Guy W. and Geraldine W. Talbot, husband and wife. A parking area has been cleared beneath a beautiful grove of trees, fireplaces, tables, swings and a modern rest house have been provided. A trail which leads to Latourell Falls, the Falls being within the Park, has been constructed. The close proximity to Portland makes it a very popular site.

An important park site was purchased by the State at Port Orford known as Battle Rock. Its historical and scenic values are of great importance. Early history of Southwestern Oregon was written at this point by the landing of a party of settlers by Capt. Wm. Tichenor on June 9, 1851. One of the finest ocean panoramas is obtained at this point. To the south, the Coast Range forms the shore line, rising in its green abruptness, while to the north, the Heads project seaward as if to protect the emerald green of the Bay. It should be noted in the

State acquisition of this site by purchase, that T. D. Davidson and Ellinor C. Davidson donated two lots in memory of their father, George Davidson. A park of future importance located three miles south of Denmark on the Roosevelt Coast Highway was purchased by the Commission. It contains 160 acres of Port Orford cedar, the consideration being $2,400. Coos and Curry Counties are the only habitat of this timber and it is being rapidly merchandized through the markets of the world. A policy of the Commission is to acquire typical stands of trees native to the State of Oregon. Supplementing this tract, the Moore Mill and Lumber Company of Bandon have donated a forty-acre tract of white cedar.

A park site of 18.1 acres located on the East Fork of Hood River on the Mt. Hood Highway was secured jointly by the Commission and the Hood River County Court. It has been named Dimmick Park in honor of an early settler.

A donation of 1.5 acres on the John Day Highway seven miles east of Dayville, by the Eastern Oregon Land Company, contains great historical value. Upon the cliffs at this point are painted the Indian lore of a day preceding the entry of the early settlers.

In Clatsop County, O. W. Taylor and Nellie Taylor have donated to the State of Oregon a 1,280-acre tract at Saddle Mountain for park purposes. The Sunset Investment Company donated a park area of 2.9 acres at Depoe Bay on the Roosevelt Coast Highway. It has a beach frontage of 1,255 feet. It is one of the scenic spots of the Oregon Coast, this Bay being unique in its formation.

The Douglas County Court conveyed to the State of Oregon 200 acres for recreational purposes on the Roosevelt Coast Highway. One hundred twenty acres of this area joins a 200-acre tract owned by the Government upon which the Umpqua Lighthouse is located, situated two miles south of Winchester Bay. Steps have been taken by the Commission to unite the two areas for park purposes. The remaining 80 acres of this donation is located just south of Clear Lake on the Roosevelt Coast Highway. Rhododendrons predominate on this tract and the development will be to further this growth from a park standpoint.

Supplementing the preceding report, on the Blue Mountain Timber Reserve between Pendleton and La Grande, there has been added 535 acres. On the Pendleton-John Day Highway nine miles north of Ukiah a tract of 370 acres of adjacent timber was purchased from the Cunningham Sheep and Land Company, at a cost of $5,807, the State Highway Commission contributing 50 per cent, the Pendleton Commercial Association donating $1,500, the Umatilla County Court, $903.50, and Mr. Fred Falconer, $500.

A bill of important portent in the furtherance of timber reserves throughout the state has been introduced in Congress. It would provide authorization for the Secretary of the Interior to exchange revested Oregon and California Railroad grant lands for privately owned timber lands now bordering our highways. On the assumption that this bill will become law, it having passed the Senate, private owners on the basis of exchange on the following highways have been approached and found receptive: The Salmon River Cut-off, Siuslaw Highway, Coos Bay-Roseburg Highway, Crater Lake Highway, Green Springs Highway, Klamath Falls-Lakeview Highway and the Columbia River Highway.

Under the provisions of the Recreational Act, whereby the State may lease, rent, or purchase from the Government, a number of park sites are in the process of acquisition. Also a number have already been secured, these being on Camas Mountain on the Coos Bay-Roseburg Highway, Humbug Mountain on the Roosevelt Coast Highway and Wildcat Creek on the Mt. Hood Highway and a timbered area on the Baker-Cornucopia Highway in Baker County. Negotiations for the acquisition of other areas owned by the Government are now under way, some of which will be completed in the near future.

During 1925 and 1926, approximately 6,000 roadside trees were planted along the state highways, mainly in Central and Eastern Oregon. Approximately 90 per cent of these trees were planted along the Columbia River Highway and the Oid Oregon Trail. The kinds used were ailanthus, locust, poplar, Russian olive, and golden willow. Their maintenance during the early years amounted to about $1 per tree per year, but as the trees developed this cost was materially decreased. Some of them were killed by fires and the low temperatures during the winter, and these were replaced. On the whole, the trees have done very well and in many cases are affording shade which is very much appreciated by the tourist who stops along the wayside. Permanent hedges in lieu of snow fences were planted in several places. These hedges are growing quite rapidly and within a few years the snow fences can be removed. In this manner a necessary protection becomes an ornament to the highway.

During the past biennium, a start was made toward the clearing of dead snags, old logs and other debris through the forest sections of Oregon highways. Such work makes it possible for the citizens of this State and our visitors to more thoroughly enjoy the scenery. The removal of debris gives the right of way the appearance of a well-kept park, and is especially appreciated when leading to recreational spots such as the Mt. Hood Loop and Crater Lake National Park.

On July 24, 1929, the late Governor Patterson designed a monument to his memory destined to live through the years. He appointed a State Parks Commission consisting of members of the State Highway Commission, former Chairman R. A. Booth of Eugene, former Chairman Wm. Duby of Baker, and Roy A. Klein, Secretary. He entrusted to them the securing of a statewide park system to be handed down to future generations. The preservation of the scenic resources of the state in public control was his purpose.

A statement showing the individual park sites and recreational areas acquired for the State will be found in Part Four of this report.

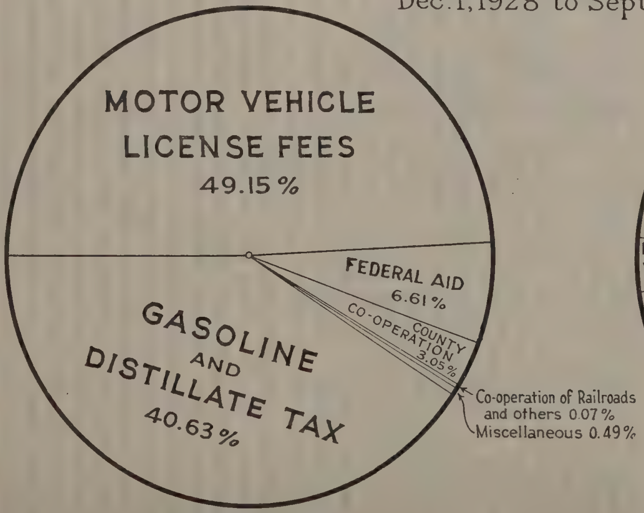
The constant removal of advertising signs of all kinds placed within the highway right of way limits has been continued with the result that this nuisance has been abated to some extent. The use of political placards tacked on telephone poles and fences has practically disappeared due largely to adverse public opinion. The continued use of the sides and roofs of buildings for cloth, paper and painted signs of all kinds is discouraging to those who have the desire to keep the landscape free from disfigurement. The number of billboards and signs of all sizes and shapes to be found along the roadsides in noncommercial locations is probably increasing, except on the lower sections of the Roosevelt Coast Highway where there has developed considerable senti-

REVENUES AND EXPENDITURES

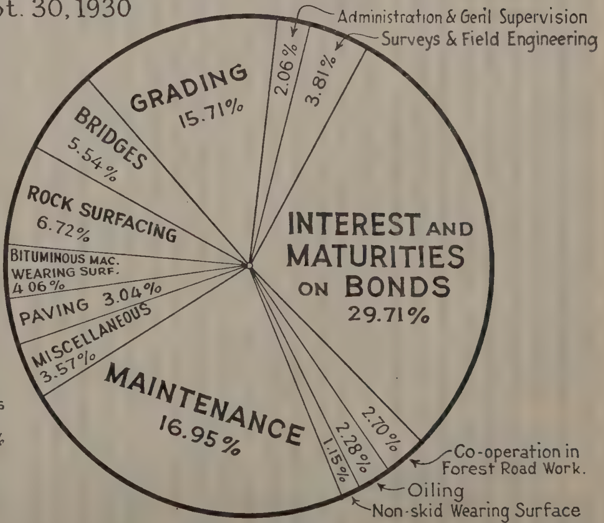
Graphic presentation of the relative amounts of revenue derived from different sources and the relative amounts expended for different purposes.

TWO YEAR PERIOD

Dec. 1, 1928 to Sept. 30, 1930



REVENUES



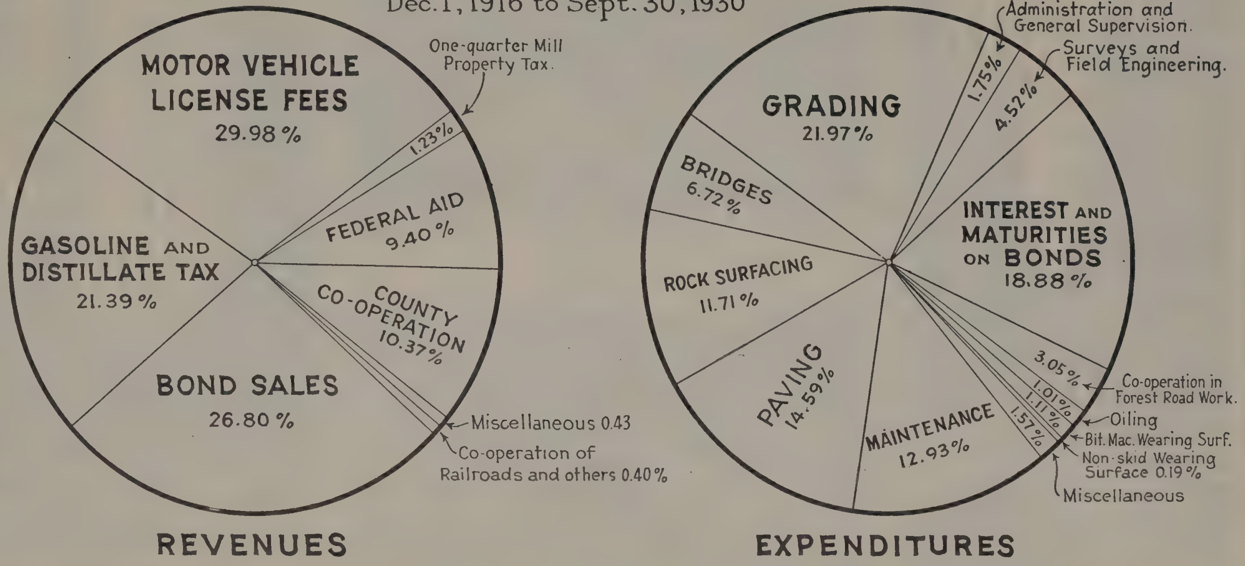
EXPENDITURES

REVENUES AND EXPENDITURES

Graphic presentation of the relative amounts of revenue derived from different sources and the relative amounts expended for different purposes.

FOURTEEN YEAR PERIOD

Dec. 1, 1916 to Sept. 30, 1930



ment for the preservation of the natural scenery resources unmarred by these forms of advertising. Recent court decisions in other states indicate that these advertising signs can be curbed or limited to less objectionable locations. Some of the larger companies have already discontinued their billboard advertising, having sensed the growing opposition of the general public.

During the summer of 1930, Mrs. W. L. Lawton, representing the American Nature Association and the National Council for Protection of Roadside Beauty, came to Oregon at the invitation of the State Federation of Garden Clubs to make a roadside survey of the state. The following is quoted from her report: "In Oregon, as elsewhere, the character of the roadsides depends upon the people. Public opinion, aroused and organized, can make the filling stations attractive, can keep advertising off the landscape, can save the timber along the roadsides and can keep Oregon beautiful. When enough Oregonians demand and practice Roadside Beauty, when they personally patronize only the good looking stations, favor the firms which favor the scenery, back up the laws to protect beauty, and give their wholehearted support to the work of the Highway Commission, then Roadside Beauty in Oregon will become an accomplished fact."

The Commission has adopted the standard warning and caution signs recommended by the United States Joint Board, and many have already been placed. As the signs now in use require replacement, the new designs will be installed. This set of designs is based on definite principles calculated to produce uniformity of significance in the signs themselves, and make familiarity with them easy to acquire on the part of the most casual driver. These principles are a set of shapes, each having its own significance; a set of color combinations, each having its own significance; a few obvious symbols and uniformity of erection.

For instance, a circular sign is used for railroad grade crossings only, and an octagonal sign for stop. Diamond-shaped signs indicate conditions in the road itself requiring slow speed and caution on the part of the driver, such as curves, etc. Square signs are used to indicate any condition requiring caution which is not inherent in the road itself, but which is due to adjacent conditions such as schools, etc. Rectangular signs of various dimensions are used to give directions and convey information to the driver.

All signs of a precautionary character, including the circular railroad sign, the octagonal stop sign, the diamond caution sign, and the square caution sign, have black lettering and borders on a yellow background. All direction signs are black on a white background. Adoption of these signs by all the states will result in a uniform sign system which should be of distinct advantage to the tourist and a safety measure to all. The placing of distance and direction signs has been continued for the information and convenience of the traveler. Also, signs marking rivers and creeks, mountain summits and elevations, historical locations, etc., will be found on all highways.

To expedite the signing work and secure uniform results in various parts of the state, an engineer has been assigned exclusively to this work. In 1929 one field crew was in the field and in 1930 two field crews were engaged in this work. A careful study is made of the loca-

1—KLAMATH FALLS-LAKEVIEW HIGHWAY NEAR QUARTZ MOUNTAIN; 2—ALSEA HIGHWAY EAST OF ALSEA; 3—JOHN DAY HIGHWAY NORTH OF DAYVILLE; 4—CRATER LAKE HIGHWAY NEAR PROSPECT

tion of all warning and direction signs so that they may be placed where most effective. Particular attention has been given to direction signs through the cities and at the junctions of important highways. Also, construction signs of various kinds have been standardized.

Since the law permits the use of state highway funds in signing public highways, some assistance has been given the Oregon State Motor Association in their cooperatiive work with the counties in signing county roads. This has taken the form of services in securing data for distance and direction signs and the furnishing of posts and painted boards.

The United States routes, a system of transcontinental and interstate highways, have been designated by number. These routes are indicated by the familiar black and white United States shield marker indicating the name of the state and number of the route. The general plan for numbering was to use the even numbers beginning at the Canadian border for east and west routes, and the odd numbers for the north and south routes, beginning on the Atlantic Coast. In this state we have No. 30, the Columbia River Highway and Old Oregon Trail, a part of a through route from the Atlantic to the Pacific, and No. 28 beginning at Ontario and passing through Central Oregon to the Coast. No. 101 is the Roosevelt Coast Highway extending through Washington, Oregon and California; No. 99 is the well-known Pacific Highway from the Canadian boundary to Mexico; while No. 97 begins at Ashland, runs east to Klamath Falls, north to Bend and Biggs, then north to the Canadian line through Central Washington; No. 199 is the Redwood Highway from Crescent City to Grants Pass.

At the request of the cities and communities on the West Side Pacific Highway, application was made to the Executive Committee of the American Association of State Highway Officials to designate the West Side Pacific Highway with a U. S. number. Since it is an alternate route for the Pacific Highway, the Committee approved the request and designated the West Side Pacific Highway between Junction City and Portland as 99W and, at the same time, designated the Pacific Highway on the east side between the same points as 99E.

The whole purpose of the route-numbering system is to clearly mark the through routes for the convenience and information of the traveler and to avoid the confusion caused by indirect and overlapping routes promoted by unprincipled roads and trails organizations. It is expected that legitimate marked routes, such as the Lincoln Highway, Old Oregon Trail, Columbia River Highway, Pacific Highway, etc., will continue to retain their identity and the use of these established names.

In previous years concrete mile posts have been set on the Pacific Highway, West Side Pacific Highway, Upper and Lower Columbia River Highway, the Old Oregon Trail and The Dalles-California Highway. During the past year, distances have been measured and temporary wooden markers have been placed on the John Day Highway throughout, also on a few other highways. These will soon be replaced by concrete posts. Mile posts are an informative guide to the traveling public but they are also a great convenience in designating certain locations which are devoid of natural landmarks. They become a necessity in designating maintenance operations.

State highway right of way lines on projects completed recently have been marked with iron pipe or pins and white posts. This will definitely mark the boundaries and will prevent encroachments by private owners in future years.

In the biennium under review, the development of the county system of market roads under the supervision of the State Highway Commission has continued.

In that period, the sum of $2,205,521.57 was raised by the state levy and $2,014,819.50 was raised by the county levies for market road purposes. Using balances on hand at the beginning of the period and other county funds from various sources, the total expenditure was $5,579,764.83. Market road levies have been made by every county in the state each year. Of the total apportioned to the counties outside Multnomah, that county has contributed, as the so-called Multnomah surplus, the sum of $593,331.37 in the two years. Since the Market Road Law became effective, 3490 miles have been graded, 2764 miles have been surfaced and 298 miles have been paved; $1,484,601.29 of market road funds have been expended for maintenance; $320,403.68 have been used by the counties for cooperation on forest highways; $638,638.55 on major bridges, and $1,183,323.12, as cooperation with the state. This indicates the magnitude and importance of the market road program.

Details of the supervision over market roads, with which the Commission is charged by an act of the legislature, are attended to by the market road engineer under the direction of the state highway engineer. His activities have, in general, been consulation with county courts and county engineers with respect to location and construction, including under the latter head the matter of specifications and methods. Coming into contact as he does with market road undertakings in every part of the state, he accumulates information on many and varied problems in one county or another which is frequently of value in helping to solve like problems in other counties. This supervision is bringing about throughout the state a desirable uniformity of standards and is helping to coordinate the general road system of the state as distinct from the state highway system. Continuation of the Oregon market road plan will give ultimately a well-balanced system of state and county roads, providing good road facilities for every part of the state and its counties.

All purchases of motor vehicles, road machinery, equipment, gasoline, lubricating oils, tires and other materials and supplies are made through the State Board of Control after bids have been submitted in the usual form. The equipment engineer keeps performance records and maintenance costs of all equipment purchased and is in a position to advise and recommend to the Board on purchases affecting the Highway Department. All equipment is charged out for the time it is used on a fair rental basis so that each construction project, maintenance operation or survey is charged with a proper proportion of the cost. The rental rates are designed to cover the cost of an annual overhaul and depreciation. Supplies are charged direct to the job on which they are used.

The main shops for the repair and maintenance of business cars, shovels, trucks, graders, oil heaters and distributors and other road equipment are located at Salem on state property. Branch shops to handle the needs of the respective localities have been constructed and are in operation at La Grande, Klamath Falls and Coquille. During the biennium, additional adjacent ground was purchased at Coquille and a storage shed erected. Additional storage space has been provided at Salem also.

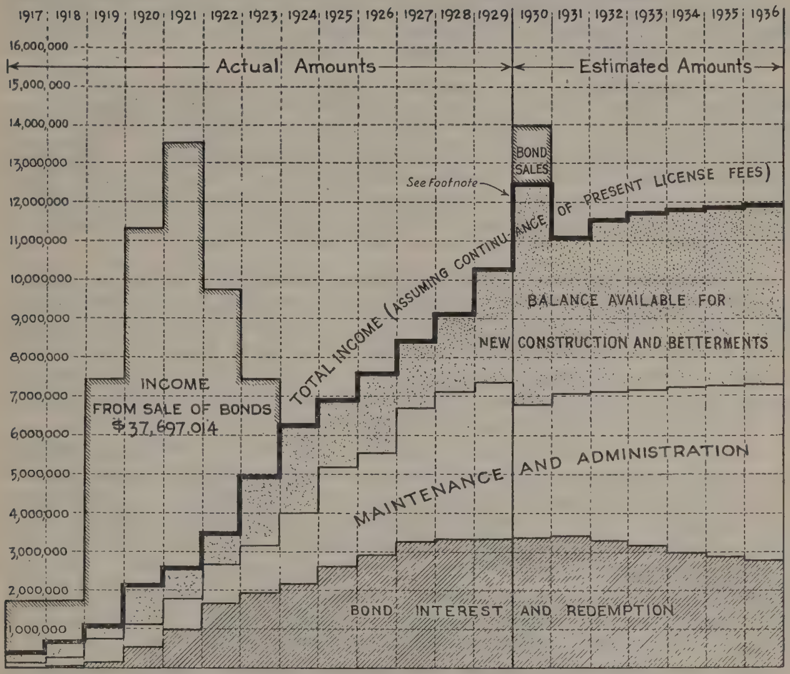


CHART SHOWING RELATION OF STATE HIGHWAY REVENUES TO STATE HIGHWAY REQUIREMENTS

Prepared September 30, 1930

Note: Abnormal increase in income in 1930 was due to change in beginning of license year from January 1 to July 1, which change resulted in fees for one and one-half years being paid in the one year 1930.

Practically all of the surplus war equipment distributed to the state at the close of the war for road building purposes has been discarded and retired from service except the Liberty trucks. Due to the greater efficiency and economy of operation of the newer type pneumatic tired trucks, these Liberty trucks will be replaced during the coming year.

The use of the road magnet, begun in 1928, has been continued during the two-year period. Thousands of pounds of metal, much of which would be injurious to tires, are picked up each year.

The necessity of maintaining all highways up to a high standard is apparent to all. On pavements, cracks must be filled, breaks repaired, depressions filled, shoulders rebuilt, etc. On oiled macadam roads, frequent patching may be found necessary where soft spots develop in the subgrade. On untreated crushed rock or gravel surfaced roads, dragging must be done at the proper time to maintain a smooth riding surface. In addition, ditches and culverts must be kept open, slides removed, weeds cut, papers and litter picked up, guard fences repaired and repainted, bolts in bridges tightened, timber bridges renewed, steel bridges repainted, stream channels cleared, etc.

For the repair of bituminous pavements, portable paving plants are operated during the summer season. Corrugations are removed without resurfacing by heating with burners designed for that purpose followed by raking and rolling while the surface is still hot.

All state highways are constantly patrolled by maintenance forces. The length of the patrol unit may vary from 20 to 40 miles, depending on the topography of the country, road surface or density of traffic. The patrol crew usually consists of the patrolman and his helper, with additional help when needed. They are available at all times of day or night during storms, floods or other emergencies. It is the constant purpose of the maintenance organization to keep all highways open for traffic at all times.

Maintenance patrol sheds have been erected at Corvallis, Sandy, Paisley, Ontario, Pendleton and La Grande. Two are under construction now, one at Baker and one at Austin. These are in addition to others built previously at other central points. Standard plans are used providing for storage bays of uniform size so that additional units may be added when found necessary. Many buildings are rented in various parts of the state to provide storage facilities for maintenance equipment.

Snow removal on the main highways continues to be an important part of the winter maintenance program, so that the public may secure the full use of the highways and delays may be reduced to a minimum. Improved snow removal equipment has made it possible to keep open all of the improved highways at high altitudes, except the McKenzie and Crater Lake highways, on which no attempt has been made. The Mt. Hood highway has been kept open to a point beyond Government Camp each season in order to provide access to this area for winter sports. The Hood River end has been closed above the Cooper Spur road.

A severe snow storm in the western and southern parts of the state, accompanied by a high wind in the vicinity of Portland, during the month of January, 1930, threatened a tie-up for a time and it was necessary to bring in equipment from other parts of the state to keep the main highways open on account of the continuous drifting.

Snow removal equipment has been improved and developed rapidly within a few years. The new units mounted on pneumatic tired trucks are much more mobile and efficient than previous models. This equipment is stationed at strategic points throughout the state so as to be available on short notice when needed. In several sections of Eastern Oregon, permanent and portable snow fences have been erected at locations subject to drifts.

The oiling program, begun in a small way in 1923, has been continued until on this date there are 1,370.9 miles of oiled macadam and 323.7 miles of bituminous macadam. Light oil was formerly used as a dust palliative but its effect is temporary and its use has been discontinued except for priming coat or in road mixes. Heavy oil is applied as a surface treatment where the macadam is sufficient to support the traffic. Its effect is more lasting. Screenings are added to heavy oil which gives a thickness of not less than an inch. Bituminous macadam is a still higher type, two inches or more in thickness, built up of layers of stone penetrated by heavy oil. All oiled surface treatments are considered a maintenance feature, but bituminous macadam, being of greater thickness, is classed as a betterment. These oiled surface treatments give a hard, smooth and dustless surface to macadam roads which resembles pavement, but it should be remembered that it is not pavement but rather an intermediate type of surface designed to fill the gap between untreated crushed rock or gravel road surfacings and standard pavements.

Oiled macadam is particularly adapted to Central and Eastern Oregon where climatic conditions are favorable, but good results have also been secured in Western Oregon despite the heavy rains of the winter season. However, in the latter instance, heavy oil has not been applied except where heavy bases had been laid.

The rapid deterioration of crushed rock or gravel roads under heavy traffic, with the accompanying dust nuisance, has been apparent to all. Careful observation showed a loss in thickness of surfacing material in excess of an inch a year. The replacement of this material requires the resurfacing of the project every five years; therefore, divided into yearly periods, the amount to be charged to maintenance is one-fifth of the total cost which should be added to the cost of regular patrol maintenance. Hence, the logical use of oil is to bind the road surface and save the loss of road materials. In other words, to seal in the rock for the purpose of preserving the stability of the road and take the wear on the surface of screenings.

Oiled surfaces are generally much smoother than the best maintained untreated macadam roads. By reason of the smoother surface, experiments readily demonstrate an immense saving in tire wear, one authority placing the figure at one-thirteenth the amount of wear as compared with rough, untreated macadam. It is also a well-known fact that, due to easier traction on the oiled surface, there is a saving in motor fuel. Maintenance of unoiled macadam requires continuous treatment with heavy blade equipment, while oil patching requires only a light truck when the work is needed, hence a substantial saving in patrol maintenance.

A further step is the development of bituminous macadam built up of multiple lifts of crushed rock or gravel of selected sizes penetrated by heavy asphaltic oils heated to high temperatures. Very clean, hard rock is required. By this method thicknesses of from 1½ to 4 inches have been built up. The variation in thickness is determined by the sufficiency of the base course. This specification is an intermediate type between an oiled surface treated macadam and the more expensive mixed asphalt or concrete pavements. Two hundred and thirty-one miles of bituminous macadam have been constructed during the biennium on roads which carry heavy traffic. At some points in Eastern Oregon where the soil conditions were particularly favorable and where gravel had been used for surfacing with considerable fine materials, road mixes have been used. This method consists of applying lighter grades of oil to the scarified and bladed surfacing material. After continuous turning over and blading until completely mixed, the material is spread out and forms a compact, hard, dustless surface.

The non-skid properties of oiled and bituminous macadam led to experiments on asphaltic surfaces which had become worn smooth and slippery. A heavy oil surface treatment with screenings was first applied at Aurora and from the satisfactory results obtained the non-skid program has been enlarged from year to year. During the biennium, the asphaltic pavements on the Lower Columbia River highway, part of the Upper Columbia River highway, in Hood River county, and on the Pacific and West Side Pacific highways in the Willamette Valley north of Eugene, have been treated with a non-skid surface treatment. The rock used must be of sufficient size that it is not forced into the old pavement in hot weather. Also it is necessary to use a minimum of asphaltic oil to prevent "bleeding" which destroys the non-skid effect.

The objections to oiling operations by the motorists have been largely overcome by improved methods of handling. Oil is now spread on only one-half of the roadway at a time and screenings are spread immediately over the hot oil which completely blot up any surplus so that there is no longer any splattering on cars. Traffic is then allowed to pass over with only short delays. Likewise, bituminous macadam and non-skid surface treatment are being placed in a similar manner with little or no inconvenience to traffic.

At the beginning, due to the experimental nature of the work and the lack of definite specifications, all oiling was done by state forces and equipment. As methods and specifications were developed, it seemed advisable to place this work on a contract basis like other work. Accordingly, one oiling contract was awarded in 1929 and five in 1930. If favorable bids are received in 1931, the contract work will be further increased and the state force work reduced. Probably five state oiling outfits will be kept, however, in order to handle short, scattered sections that do not lend themselves readily to contract work and also for use in emergencies.

Under the highway improvement district law, two districts have been formed. The Nestucca Highway Improvement District, which is located in both Tillamook and Yamhill counties, was discussed by local residents in the summer of 1929. The commission held two meetings, one at Beaver, Tillamook county, on August 28, 1929, and the second at Carlton on October 29, 1929. The boundaries were finally approved on March 27, 1930. The formation of the district was carried at the spring election in 1930. The district roughly comprises a rectangular strip 24 miles long with an average width of 10 miles, extending from Beaver to the line between Ranges 5 West and 6 West which is 9 miles west of Carlton. The purpose of the district is to extend the present Blaine Market Road up the Nestucca river and through to a connection with Carlton, Yamhill or McMinnville.

The first meeting to consider the boundaries of the North Umpqua-Diamond Lake Highway Improvement District was held on December 11, 1928, at Roseburg. On account of many changes proposed, the petition was rejected. A second meeting was held October 28, 1929, also at Roseburg. On December 12, 1929, the Commission approved the boundaries with the elimination of two hundred and seven sections, mostly lying west of the Pacific Highway and east of Oakland in the Rock Creek drainage. The district as approved consists of a strip from 15 to 21 miles in width extending from the Pacific Highway east to the summit of the Cascade Mountains, including the city of Roseburg and, in general, the drainage basin of the North Umpqua River. The purpose

UPPER—BITUMINOUS MACADAM ON CENTRAL OREGON HIGHWAY WEST OF BURNS; CENTER—BITUMINOUS MACADAM IN PROCESS OF CONSTRUCTION ON McKENZIE HIGHWAY EAST OF SPRINGFIELD; LOWER—BITUMINOUS MACADAM ON THE DALLES-CALIFORNIA HIGHWAY NORTH OF MERRILL

of the formation of the district was to raise local funds to be used in conjunction with forest funds to build a road from Roseburg up the North Umpqua River and its tributaries to Diamond Lake. The district was formed by vote of the people at the spring 1930 election.

The Vernonia-Nehalem River-Coast Highway Improvement District, comprising a strip of land 15 miles wide extending from the ocean beach between Nehalem Bay and Tillamook Head east to the line between Ranges 2 and 3 West, has been proposed. It lies in Clatsop, Columbia, Tillamook and Washington Counties. The stated purpose for the formation of the district was to construct a road west from Vernonia to the coast. A hearing was held at Jewell, Clatsop County, on June 23, 1930. Later the proponents requested that the matter be held pending the results of the investigation of the various short routes proposed between Portland and the coast, consequently no decision has been made.

When the last biennial report was made, there was pending some litigation, the determination of which was of vital importance to the State Highway Commission; namely, the case of Guy C. H. Corliss, administrator of the estate of Albert D. Jones, deceased, vs. H. B. Van Duzer, and the case of United Contracting Company et al. vs. the State Highway Commission.

The first case was an effort to fix personal liability upon H. B. Van Duzer as chairman of the commission, for the accidental death of a person traveling upon the highway. The case was predicated upon the claim that adequate warning signs had not been maintained at a place where some highway repair work was being done. The alleged negligence was charged to Mr. Van Duzer and for such alleged negligence it was the claim of the plaintiff that Mr. Van Duzer should respond in damages from his personal funds. The supreme court held otherwise, and said that under the circumstances a member of the Highway Commission was not responsible.

The second case was an effort on the part of the contractors to set aside the award made by the engineer and have the court make an award allowing to the plaintiffs a sum of money considerably in excess of the amount determined by the engineer and then that the Highway Commission be required to pay the amount awarded by the courts. The case was defended by the Highway Commission on two grounds: namely, that the suit was in effect a suit against the state and therefore, without the state's consent, could not prevail; and on the other ground that on the merits of the case the plaintiffs were not entitled to recover. The trial court held in favor of the plaintiffs and set aside the engineer's award and made an award considerably less than asked by the plaintiffs, but nevertheless considerably more than was allowed by the engineer. The supreme court reversed the trial court and held that the case was in effect a case against the state and that the plaintiffs were not entitled to prosecute the same. The court, however, did not go into the merits of the case.

Since the institution of the United Contracting Company case, the legislature has passed an act which now permits suits against the state on highway contracts.

There has been considerable other litigation in which the state has been interested, most of which involved condemnation cases. It is gratifying to recount that practically all the condemnation cases have resulted in judgments either for less or approximating very closely the amounts previously offered by the state. In very few instances has the state been required to pay excessive judgments. Many of the cases have been settled by agreement after the filing of the complaints and without the necessity of a trial.

Traffic counts were regularly made up to and including the month of August, 1929, at certain counting stations scattered throughout the state but strategically located to secure representative traffic figures. A typical example is shown for a 16-hour count, 6 a. m. to 10 p. m., on the same day in the week in the month of July for the years 1921 to 1929, inclusive:

	1921	1922	1923	1924	1925	1926	1927	1928	1929
Pacific Highway near Wolf Creek:									
Nonresident	151	268	583	678	827	891	957	909	973
Resident	168	160	240	337	279	359	375	471	489
Total	319	428	823	1,015	1,106	1,250	1,332	1,380	1,462
Columbia River Highway 15 miles west of Pendleton:									
Nonresident	63	139	275	344	364	306	409	432	438
Resident	139	169	231	288	225	261	315	378	475
Total	202	308	506	632	589	567	724	810	913
Old Oregon Trail at Meacham:									
Nonresident	38	87	104	273	261	304	290	286	348
Resident	98	86	70	320	227	270	253	239	437
Total	136	173	174	593	488	574	543	525	785

In the summer of 1929, the Federal Bureau of Public Roads desired to secure traffic figures on the highways of the western states for a study of the future needs of the state and federal aid highway systems. Arrangements were made with thirteen of the western states for a cooperative traffic survey to cover a full year to be made simultaneously in all of the states. This state, therefore, abandoned its former plan for traffic counts and undertook a new count under a system devised by the Bureau of Public Roads. The work was begun on September 10, 1929, and continued through to September 7, 1930. A selection was made of 84 counting stations divided into four circuits, one circuit of 12 stations and three of 24 stations. A count of the 12-station circuit was made at each station every thirteen days while on the 24-station circuits a count was made at each station every 26 days. Each count covered a ten-hour period from 6 a. m. to 4 p. m. or from 10 a. m. to 8 p. m. on alternate counting days. Night counts were made at each station from 8 p. m. to 6 a. m. about once in three months. The 12-station circuit was located principally in and around Portland where there was a larger volume of traffic. In addition to the above, counts were taken once each three months on two consecutive days from 10 a. m. to 8 p. m. and 18 additional stations in outlying districts, principally on ferries and bridges.

The stations selected for the counts were at such locations that representative averages of through and local traffic could be secured. Most of these stations were at highway junctions where traffic in all directions could be counted. The count divided the traffic into these classifications: Passenger vehicles, trucks, trailers, stages and non-residents' vehicles.

About four hundred thousand Government inquiry cards were handed out by the traffic checkers. These cards requested information as to origin and destination, miles traveled during the day, number of passengers, classification of residence as to farm, village or city, and home state. On the reverse side they were addressed to the Bureau of Public Roads and carried the Government frank privilege.

By alternating the count on different days of the week and different hours of the day, figures were obtained which represent a cross-section of the total traffic from which a close estimate of the actual traffic may be computed. These figures, when tabulated for the entire state, will be a material help in planning future highway improvements. All of the work of tabulating the results, compiling the data from the cards and preparing the final report is being handled by the United States Bureau of Public Roads in Washington, D. C. About one-third of the cost of the field work has been defrayed by the Government also.

Both the Secretary of State and the Highway Commission are authorized to employ traffic officers. To avoid duplication of effort and harmonize the work of the two departments, these men were placed under one head several years ago and this arrangement has since been continued. Both departments are represented by an approximately equal number of traffic officers. The salaries, travel expense and cost of automobile operation and upkeep of all employes are paid from the Motor Vehicle License Fund. Reimbursement is made from the State Highway Fund for expenditures made for those officers, now numbering thirty, commissioned by the Highway Commission. Many of the department engineers and superintendents are deputized to enforce traffic laws in emergencies. They receive no extra compensation for this work.

The protection of the roads against overloaded trucks and damage by cleated tractors requires constant vigilance. Oiled surfaces are particularly vulnerable to the latter. Traffic officers are provided with portable scales to weigh up trucks that are suspected of violating the laws. A platform scale was placed at Canemah some years ago and is used to check up on the freight truck traffic on the Pacific Highway. A second scale was installed south of Tillamook a few years ago to weigh up log haulers who are inclined to overload.

As provided by law, log hauling on state highways is permitted only under permits issued by the State Highway Commission. These permits are granted only after investigation of the proposed route to be hauled over and the posting of a bond to guarantee faithful compliance with the terms of the permit and payment for any damage in excess of ordinary wear. Permits are issued for one year only. Compared with 210 permits issued in 1927 and 250 in 1928, 431 were issued in 1929 and 247 up to June 30, 1930.

Overloads, coupled with insufficient rubber in solid tires, are very damaging to pavements and macadam surfaces, while overloading, combined with excessive speeds, sets up impact stresses which are very damaging to the lighter types of paving. The almost universal use of pneumatic tires on the newer trucks and likewise the widespread use of dual tires is a saving factor in highway maintenance and upkeep. It is noted, however, that the shoulder maintenance on pavements is much increased by trucks and busses of maximum width traveling at high speeds because of the fact that frequently one of the dual wheels is over the edge of the pavement and travels on the gravel shoulder with resultant rapid wear.

The separation of railroad and highway grade crossings is always desirable as a safety feature. This may be accomplished either by structures or by relocation to eliminate the necessity of crossing. An example of the latter is found on the Waldport-Yachats Section of the Roosevelt Coast Highway in Lincoln County where two grade crossings of the Pacific Spruce Corporation railroad were avoided by locating the highway on the ocean side and moving over the railroad tracks to a new location for a distance of eight thousand feet. A grade crossing of the Southern Pacific Railroad was eliminated by the construction of an undercrossing on the Coast Highway south of Lakeside in Coos County. In the present year a contract was let for the construction of an overhead crossing of the Southern Pacific Railroad at Juno, three miles north of Tillamook, eliminating a dangerous grade crossing.

The hazard of several grade crossings in the Tualatin Valley and in the west side of the Willamette Valley has been materially reduced by the discontinuance of the Red Electric trains, leaving only slower moving steam trains. Studies have been made and a report is now in preparation for the elimination of the Pacific Highway grade crossing of the Southern Pacific tracks north of Albany. It will be the constant policy of the Commission to eliminate railroad grade crossings either by structures or relocation as fast as funds can be spared for that purpose.

All public utilities that desire to place pole lines or pipe lines on the state highway right of way have a legal right to do so. The State Highway Commission may designate, however, the location they are to occupy. To handle this matter in a formal way, all utilities are, therefore, required to secure permits or franchises for their construction. These franchises are issued only after satisfactory arrangements have been made for the proper location of poles or pipe lines so as not to interfere with maintenance operations or future widening.

The rapid expansion of facilities for furnishing electric and telephone service in rural communities as well as power, telegraph and long distance telephone lines, has increased the demand for space on the rights of way. It has been the Commission's policy to reserve one side of the highway for the light and power companies and the other for telegraph or telephone use. Common user poles are required, where practical, to reduce the number of poles. New lines are required to take care of existing lines by relocation so as to remain on one side of the road and avoid crossing and recrossing.

Where scenic viewpoints are involved, the utilities are required to place their poles in such positions that they do not obstruct or mar the view. This requirement has been met by a fine spirit of cooperation by those companies affected. A more recent development has been the extension of gas mains through the Willamette Valley. This construction is also handled under permit. Between December 1, 1928, and December 31, 1929, 96 pole line and 63 pipe line franchises were issued, while between January 1, 1930, and September 30, 1930, 55 pole line and 56 pipe line franchises were issued.

The great need for wider rights of way is everywhere apparent. Under the Oregon law the necessary rights of way were secured by the counties. In most cases the important state highways were located along the existing county roads. Some betterments in alignment were made and the new right of way was secured 60 feet wide, but along the old roads, in many cases, there is no recorded width, and fences have been permitted to encroach for many years, and improvements to build up close to the road so that in very many instances not more than 50 feet is available, and in some cases as little as 40.

With space taken by pole lines and the need for sidewalks in the suburban districts to keep pedestrians off the traveled way, these narrow rights of way become insufficient for their original purpose, the roadway itself. The rapid increase in traffic has necessitated wider pavements and wider rock surfacing together with a sufficient shoulder to provide space for vehicles to park off the traveled way. Further, the necessity of space for drainage and the maintenance of shoulders and ditches by the use of power equipment is a factor to be considered. The cost of securing narrow strips of right of way along the present highways will be great in view of the improvements made to abutting property. For these reasons, the Commission has made it a rule to require a minimum of 80 feet for all new highway rights of way, believing that it is necessary to provide ample width for future requirements.

In the interest of greater safety, attention has been given to many congested areas, particularly through the business sections of cities and towns. In many cases the streets through which highways are routed are narrow and the rows of parked vehicles on either side further reduce the travel width and slow down traffic. This condition is further intensified by street car tracks in some instances. With an annual increase in traffic, these conditions are bound to become worse instead of better. Therefore, it seems apparent that some changes will have to be made ultimately in the highway routes through cities and towns and the sooner this is done the better it will be for all concerned. The solution will be found in "by pass" or alternate routes around the business districts such as has been done in many eastern cities which have already had to solve these problems. In many cities of the state, through highways are not now routed through the main business sections.

A beginning has been made in widening highways through the smaller community centers where there is particular danger. One of these was in the former town of Houlton, now a part of St. Helens. In this case a railroad track to the east, heavily traveled intersecting streets, and buildings built up close to the edge of the traveled way made a hazardous condition for through travel. A wider right of way was purchased, buildings shifted and moved back and the width of the roadway increased. A widening project, though of lesser magnitude, was completed at Aloha on the Tualatin Valley Highway by purchasing additional right of way and moving back the buildings.

Some mention should be made of line changes at Beaverton and Sandy where a wider right of way was acquired on a back street parallel to the main business street, thus avoiding congestion and interference with through traffic.

During the winter months, the Commission has made it a policy for several years to reduce the load limits on certain highways in Western Oregon where subgrade conditions are affected by the extremely heavy rainfall. The load limits in these cases have been reduced to three-fourths of the normal limits, which has worked out satisfactorily. In Eastern Oregon it has been the policy to place load limits at some points for a short time only when the frost was going out of the ground in the spring or when affected by alternate freezing and thawing conditions.

The administration and general supervision charges, including surveys, construction and maintenance engineering and all overhead costs, have totaled, in the biennium, 5.88 per cent of the total expenditures, not including market road disbursements, as compared with a general average of 6.14 per cent for the 14-year period. Excluding bond interest and principal payments, the average for the biennium is 8.36 per cent of all other expenditures.

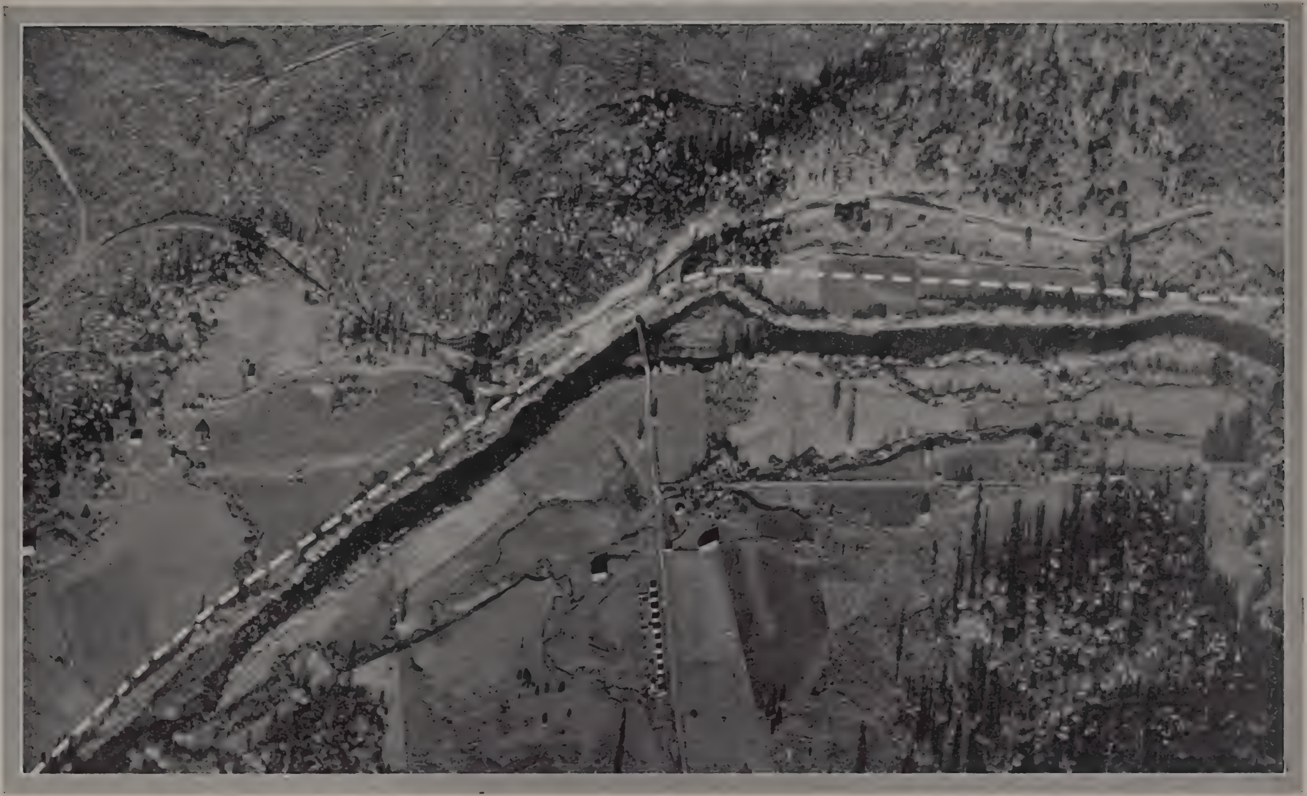
On January 1, 1929, the State Highway Departments of Washington and Oregon took over from Clark County, Washington, and Multnomah County, Oregon, the Pacific Highway bridge across the Columbia River between Portland and Vancouver, Washington, and it has since been operated jointly by the two states as a free bridge. Traffic increased at least 50 per cent the first year that the tolls were removed. The final payment under the agreement with Multnomah County required the payment from the state highway fund to Multnomah County of $50,670.24. This, with Multnomah County's share of the tolls, provided a sufficient amount to build the viaduct, widen embankment and pavement on the Denver Avenue approach and provide a sinking fund to meet interest charges and the outstanding bonds at maturity.

The operating and maintenance costs for the year 1929 were $21,341.99. Revenue consisting of tolls for street cars and rentals for two cables amounted to $14,586.68 for the year 1929. The balance of cost was divided equally between the two states. These figures will be greatly exceeded in years when it is necessary to repaint or undertake other maintenance of the structure. Included in the transfer of the main river bridge from Multnomah County was the Oregon Slough bridge and approaches which, however, was taken over by the State of Oregon alone.

On March 29, 1930, the Columbia River-Longview bridge was completed and opened for traffic. This is a privately-owned toll bridge crossing the Columbia River between Longview and Rainier. Connection is made with the Columbia River Highway near the west city limits of Rainier.

At the request of the County Court of Malheur County, a steel bridge across the Snake River at Nyssa was taken over for maintenance. This forms a link between the highway systems of Idaho and Oregon, being the upper of four bridges across the Snake River between Idaho and Oregon in 30 miles. The State of Idaho or the Idaho counties and cities have bridges opposite Weiser and Payette, while Oregon has the Nyssa structure and a majority interest in the Ontario bridge. The State of Idaho has endeavored to interest the Oregon Commission in a bridge across the Snake River at Porter's Ferry, eight miles north of the Weiser bridge, to be built on a cooperative plan, but the advantage to this state is not apparent.

Ferry operations have been continued on both the Rogue River and Coos Bay on a one-half hour schedule. No toll is charged. On account of the congestion of traffic at Coos Bay, the ferryboat Oregon, formerly on the Rainier-Longview run, was purchased to replace the ferry Roose-



AN EXAMPLE OF THE VERTICAL AERIAL VIEWS THAT HAVE BEEN TAKEN FOR USE IN CONNECTION WITH RECONNAISSANCE SURVEYS OF THE SEVERAL PROPOSED SHORT ROUTES BETWEEN PORTLAND AND THE OCEAN BEACHES

velt, which was first built and operated by Coos County but which had been taken over and operated by this commission since May of 1928. The capacity of the Roosevelt was 19 cars, while the Oregon carries 34 cars. There has been no congestion of any consequence since the Oregon has been put on this run. The Roosevelt is docked at the ferry slip at North Bend and kept in condition for standby service in case of emergency. The purchase price of the Oregon on the Columbia River was $18,500.00 and the towage to Coos Bay, insurance, remodelling and incidental items were $3,008.36 more, or a total cost of $21,508.36. During the present season the approach and slip at North Bend has been rebuilt and widened and on the north shore of the Bay a new approach and slip has been built at Russell Point. This timber trestle extends about 1,700 feet out from the shore at Russell Point, which brings the ferry slip to deep water and will eliminate the necessity of keeping a dredged channel open as well as shorten the time of crossing. With this improvement, more frequent ferry service may be scheduled in the peak travel months.

Approaches and slips for ferries have been built on the south side of Yaquina Bay, the north side of Alsea Bay and the southern side of the Siuslaw River at the ends of the new construction projects.

A short road from the city of Portland to the coast has been advocated by many residents of Portland and the various beach resorts. In 1926, a detailed location survey was made of the Wilson River route and estimates prepared. In order to make comparisons with other routes, studies have been made of several different locations in a preliminary way to determine the controlling facts, lengths, rise and fall, maximum curvature, approximate costs, etc. It is planned to use aerial photography in this work, which will be the first time it has been used by the department. A report will be available about the first of January.

The Bureau of Public Roads has continuously urged the Commission to construct the Oregon portion of the Umatilla-Wallula Cut-off, which is on the Federal Aid System. A survey was made in 1930 which showed a length of 19.7 miles in Oregon. There are about six miles in Washington. The problem is somewhat complicated by the railroad relocation and the height of roadbed grade which will be necessary to avoid submergence by the backwater from the Umatilla Rapids Dam if built at some time in the future. Both the Oregon and Washington units should be built simultaneously to secure use of the road throughout.

The legal designation of the state highway which traverses the Oregon Coast from the Columbia River to the California state line is the Roosevelt Coast Military Highway. This designation was given in 1919 when $2,500,000 of general obligation bonds were voted to construct this road provided an equal amount was appropriated by the Government. The Government funds were not appropriated and the authority for the state bonds has lapsed. The road has been built as a part of the state highway system and financed in the same manner as other highways. The name is rather awkward, long and confusing. There are several other Roosevelt Highways in the United States. The name Oregon Coast Highway has been suggested as more distinctive. With no disrespect to the memory of a great man, the change in name to Oregon Coast Highway or Coast Highway is suggested for the consideration of the members of the Legislature.

In order to designate by simpler and more appropriate names, two highways have been renamed. The Ashland-Klamath Falls Highway which connects the Pacific Highway at a point six miles south of Ashland in Jackson County with The Dalles-California Highway at Klamath Falls has been named the Green Springs Highway, taking the name from the Green Springs on the west slope of the range, which for many years was the local name for the old stage road. The highway from Prineville south along the Crooked River and Bear Creek to intersect the Central Oregon Highway 10 miles east of Millican has been named the Crooked River Highway.

In a response to a request of the Board of County Commissioners of Multnomah County, on March 1, 1930, the Commission took over for maintenance that portion of the Columbia River Highway between the east city limits of Portland and the Hood River County line via Sandy Boulevard, a distance of 39.4 miles. During the present season, the pavement has been patched and thickened throughout its entire length and sufficient rock has been crushed for a non-skid surface treatment next season with additional material for rock shoulders. Also wooden guard fence has been lowered and rebuilt and other minor repairs and improvements carried on as routine maintenance. Snow equipment has been provided to keep the road open in the event of a severe storm in the gorge.

The Commission has continued its policy of issuing a bulletin of road conditions each week, which is sent to newspapers and travel information bureaus both within and outside of the state. Once each year a new road map is prepared, with all corrections made to bring it up to date. Plates 17 by 23 inches are made and several thousand maps are printed and distributed. On the reverse side of the maps there are mileage tables, a small scale map of the city of Portland, a small scale key map of the Northwest states, and information concerning state traffic regulations and locations of non-resident registration stations. These plates are loaned free of charge to chambers of commerce and others desiring to use them to print their own maps.

It is a pleasure to comment on the very satisfactory office space allotted to the Commission by the State Board of Control in the new State Office Building, which has been occupied since April 1, 1930. The entire third floor of this building, consisting of 12,893 square feet, is occupied by the department, which permits the whole organization to be together with adequate space for each of the various branches. Under the previous arrangements, with part of the offices in the south wing of the third floor of the Capitol Building and the balance in a downtown office building, employes worked in crowded quarters in both and much time was lost in handling business between departments as well as the cost of messenger service.

The greatest handicap of operating in the old quarters, however, was the disruption of the organization caused by the necessity of moving from the Capitol to a downtown building each second year in order to vacate committee rooms for the Legislature. The size and arrangement of the rooms in the new building were planned to best suit the needs and convenience of the department with the result that there is an economical use of all the space provided.

Under more recent arrangements, the materials testing laboratory, located for many years at 1260 State street, in a privately owned store building, has been moved into the south half of the basement of the State Printing Building, occupying space formerly used by the Motor Vehicle Department. Up-to-date laboratory equipment has been installed and the department is now equipped to handle tests on construction materials of all kinds. The rental paid to the State Board of Control for the space occupied in the office building is $902.51 per month, and for the laboratory, $75 per month.

The report of the engineer which follows, gives in detail the various construction and betterment projects undertaken with detail as to the expenditures made on each project. A summary of the maintenance work in each county is also included. It will be noted that considerable progress has been made but that there are still many gaps to be filled and several extensions and connections to be made to properly serve all parts of the state.

After a long construction period starting at the very beginning of the state highway program, the Commission is now ready to announce the expected completion of the remaining grading and minor bridges on the Roosevelt Coast Highway by the close of the year 1931, and the completion of the surfacing by the end of 1932, affording a through, all-year highway, from the California state line to the Columbia River, 395 miles in length and paralleling the Pacific Ocean throughout the greater part of its length. When fully opened for travel, it is confidently expected that its scenic beauty will be a great attraction for tourist travel but at the same time it serves a very useful purpose in connecting up all of the coast cities.

The Commission is deeply indebted to the officials of the U. S. Bureau of Public Roads and the U. S. Forest Service for working out in a cooperative spirit the many problems connected with the Federal Aid and Forest Highway Programs. Acknowledgment is also made of the support received from the county officers and the assistance rendered by other state officers at various times. The Commission is, indeed, grateful for the continued confidence expressed in its work by the people and press of the state.

STATEMENT OF RECEIPTS AND DISBURSEMENTS THROUGH THE STATE HIGHWAY FUND

December 1, 1928, to September 30, 1930

This statement includes only those receipts and disbursements which have been handled through the State Highway Fund. For complete statements of the revenues and expenditures of the State Highway Commission see Part Three of this report.

RECEIPTS

Classification	Receipts Dec. 1, 1928, to Dec. 31, 1929	Receipts Jan. 1, 1930, to Sept. 30, 1930	Total Receipts Dec. 1, 1928, to Sept. 30, 1930
Motor vehicle license fees	$ 5,422,144.27	$ 5,655,325.34	$11,077,469.61
Gasoline and distillate tax	5,036,055.17	4,509,905.32	9,545,960.49
Motor transportation fees	126,109.06	345,955.94	472,065.00
Federal aid	624,415.28	927,451.26	1,551,866.54
County cooperation	314,623.53	88,550.02	403,173.55
Miscellaneous cooperation	9,969.29	5,379.34	15,348.63
Interest on bank balances	49,021.98	26,090.85	75,112.83
Fines for traffic law violations	25,143.10	15,346.05	40,489.15
Revenues from sales and rentals	93,148.71	178,778.92	271,927.63
Total	$11,700,630.39	$11,752,783.04	$23,453,413.43
Balance on hand December 1, 1928:			
Cash (including $75,000 in revolving fund)	$ 725,103.82	$	$ 725,103.82
Uncashed warrants	44,164.55		44,164.55
Total receipts in highway fund	$12,469,898.76	$11,752,783.04	$24,222,681.80

DISBURSEMENTS

Classification	Expended Dec. 1, 1928, to Dec. 31, 1929	Expended Jan. 1, 1929, to Sept. 30, 1930	Total Expended Dec. 1, 1928, to Sept. 30, 1930
New construction (state share only)	$ 1,026,230.63	$ 1,574,163.66	$ 2,600,394.29
Major additions and betterments (state share only)	1,153,762.93	1,952,933.76	3,106,696.69
Special maintenance	498,379.21	95,104.27	593,483.48
Cooperation in forest road work	82,000.00	524,986.98	606,986.98
Minor additions and betterments	501,815.18	248,163.94	749,979.12
General maintenance	2,630,200.56	1,789,903.93	4,420,104.49
Rights of way, patrol stations, etc.	94,866.20	71,678.28	166,544.48
Operation of draw bridges and ferries	60,990.40	38,908.78	99,899.18
Parks and timber preservations	29,595.91	39,933.95	69,529.86
Enforcement of traffic laws	77,393.10	63,704.00	141,097.10
Equipment and supplies	328,117.84	Cr. 42,770.78	285,347.06
Interest on bonds	1,503,578.47	1,418,314.70	2,921,893.17
Maturities on bonds	1,825,000.00	1,925,000.00	3,750,000.00
Administration and supervision	243,234.27	220,392.82	463,627.09
Surveys	71,985.55	77,665.98	149,651.53
Engineering county construction	3,489.23	Cr. 263.84	3,225.39
Miscellaneous general expense	29,903.09	15,399.21	45,302.30
Federal aid funds disbursed through highway fund	624,415.28	927,451.26	1,551,866.54
County funds disbursed through highway fund	314,623.53	88,550.02	403,173.55
Funds of miscellaneous contributors disbursed through highway fund	9,969.29	5,379.34	15,348.63
Disbursements offset by credits accrued through sales and rentals	93,148.71	178,778.92	271,927.63
Total disbursements from state highway fund	$11,202,699.38	$11,213,379.18	$22,416,078.56
Balance on hand Jan. 1, 1930	$*1,267,199.38		
Balance on hand Oct. 1, 1930			$†1,806,603.24

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* This balance includes $15,020.67 in uncashed warrants and $75,000 in revolving fund.

† This balance includes $15,000 in uncashed warrants and $75,000 in revolving fund.

RECONCILIATION OF DISBURSEMENTS THROUGH THE STATE HIGHWAY FUND WITH NET EXPENDITURES ON STATE HIGHWAY WORK

December 1, 1928, to September 30, 1930

Total disbursements through state highway fund		$22,416,078.56
Add for payments made direct by counties	$314,785.58	
Deduct for disbursements offset by credits accrued through sales, rentals, etc.	271,927.63	
Difference to be added		42,857.95
Net total of expenditures made on state highway work under the direct supervision of the State Highway Commission		$22,458,936.51

STATEMENT OF RECEIPTS AND DISBURSEMENTS THROUGH MARKET ROAD FUND

December 1, 1928, to September 30, 1930

It is to be noted that this statement covers a period which does not coincide with the calendar or tax years. For statements showing the receipts and disbursements of market road funds for the separate tax years, see page 75, and the market road tables which appear in Part Four.

RECEIPTS

Net deficit on December 1, 1928		$ 20,874.60	
Receipts from state market tax:			
December, 1928	$460,716.11		
April, May, June, 1929	561,166.15		
November, December, 1929	561,166.03		
May, June, 1930	562,494.40		
		2,145,542.69	
Total receipts			$2,124,668.09

DISBURSEMENTS

Cash payments to counties	$2,087,448.67	
Services, materials, etc., furnished to counties	Cr. 1,560.29	
Administration and general supervision	30,456.66	
Total disbursements		$2,116,345.04
Balance on hand, October 1, 1930		$ 8,323.05

The amounts given in the above statement do not include $41,438.63 disbursed by Harney county in connection with contract market road work on the Nigger Flat-Vanderveer section of the Burns-Drewsey market road, which disbursement by reason of the work having been supervised by the highway department was recorded in the highway department's books.

REPORT OF AUDITORS

PRICE, WATERHOUSE & CO.
ACCOUNTANTS AND AUDITORS

Public Service Building, Portland, Oregon

May 9, 1930.

The Oregon State Highway Commission, Salem, Oregon.

Dear Sirs: In accordance with your instructions we have made an examination of the records of cash receipts and disbursements of the Oregon State Highway Commission for the period from November 16, 1928, to December 31, 1929, and as a result thereof we have prepared and attach hereto a Statement of Receipts and Disbursements for that period.*

Our examination was directed to a general verification of the cash transactions during the period under review. We have satisfied ourselves as to the general accuracy thereof by a thorough check of the records during certain periods selected by us. During the course of our work we ascertained that an adequate system of internal check is being maintained.

The cash receipts as recorded by the State Highway Commission for the period under review were checked with the monthly totals of the classified receipts as shown by the records of the Treasurer of the State of Oregon. The individual amounts included in our test periods were also checked in detail with the items recorded by the State Treasurer.

The cash receipts are, for the most part, received direct by the State Treasurer on behalf of the State Highway Commission. Miscellaneous receipts from sales of parts, rental of equipment, etc., are, however, collected by the State Highway Commission and the funds forwarded to the State Treasurer. We have made extensive tests of these transactions.

The disbursements made in the months selected by us were verified fully by examination of the paid warrants, original approved vouchers and supporting invoices and other documents on file in the department of the Secretary of State. The payroll disbursements from the revolving fund were verified by examination of paid checks, original payrolls and time statements for our test periods and the extensions and footings of the payrolls were thoroughly checked by us.

The classification of disbursements shown in the attached Statement of Receipts and Disbursements was compiled by the Engineering Department of the Commission. While the correctness of the distribution has not been checked by us, the total disbursement is in agreement with the general records of the Commission.

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* The statement here referred to is on file in the office of the State Highway Commission.

The funds of the Highway Commission as at December 31, 1929, comprised the following:

State Highway Fund	$1,177,178.71
Market Road Fund	11,501.71
Total funds held by State Treasurer	$1,188,680.42
Revolving fund	75,000.00
Total funds at December 31, 1929, per Statement of Cash Receipts and Disbursements	$1,263,680.42†

The balances in the state highway and market road funds at December 31, 1929, were reconciled by us with a certificate received from the office of the State Treasurer. The total funds held by the State Treasurer were also reconciled with the total balance on that date as recorded in the department of the Secretary of State. The reconciliation of the funds may be summarized as follows:

Balance at December 31, 1929, per certificate received from the State Treasurer		$ 433,374.70
Deduct—Warrants issued and outstanding at December 31, 1929		81,341.51
Balance per records of Secretary of State		$ 352,033.19
Add—Loan made to the General Fund of the State of Oregon		1,000,000.00
		$1,352,033.19
Deduct—		
Vouchers approved by Highway Commission for which warrants had not been issued at December 31, 1929	$ 162,685.63	
Warrants cancelled by Secretary of State, adjusted by Highway Commission in Jan., 1930	667.14	163,352.77
Balance at December 31, 1929, per records of Oregon State Highway Commission		$1,188,680.42

The loan to the General Fund of the State of Oregon was certified to us by the State Treasurer and is in accordance with the records of the State Treasurer and the Secretary of State.

The revolving fund of $75,000 was reconciled by us with the balance on deposit with Ladd & Bush, Bankers, Salem, Oregon, at December 31, 1929, as stated in a certificate received by us direct from that depository. The reimbursements of the revolving fund were checked by us in detail with the bank statements and all checks issued during our test periods were examined by us.

The warrants held for collection by the State Highway Commission at December 31, 1929, were examined by us or otherwise satisfactorily accounted for. These warrants were received prior to December 1, 1927. Since that date all warrants received by the Highway Commission have been transferred to the State Treasurer and credit has been received therefor.

As heretofore it was found that the records were maintained in excellent order and the office routine was conscientiously carried out. During the course of our examination our representatives were afforded all assistance requested and our examination was facilitated by the helpful cooperation of the office staff of the various departments.

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† This balance includes balance on hand in market road fund but does not include uncashed warrants on hand. Subtracting $11,501.71 which is the balance in the market road fund, and adding $15,020.67 which is the amount of uncashed warrants on hand, increases the balance to $1,267,199.38, which checks with the balances shown elsewhere in this report.

In conclusion, we desire to state that, subject to the foregoing comments, the attached statement,* in our opinion, properly sets forth the cash receipts and disbursements of the Oregon State Highway Commission for the period from November 16, 1928, to December 31, 1929, and the funds on hand at December 31, 1929.

Yours very truly,

(Signed) PRICE, WATERHOUSE & CO.

CERTIFICATE OF THE SECRETARY OF STATE RELATIVE TO WARRANT AUDIT

I, HAL E. HOSS, Secretary of State of the State of Oregon, do hereby certify that I have legal custody of the original vouchers approved by the various state boards, institutions and commissions for payment, and also issue all warrants in payment of claims against the State and have legal custody of all such warrants paid by the State Treasurer, as provided by law; and

I FURTHER CERTIFY, That the books, records and accounts in the office of the Secretary of State have been audited for the six months' period ending June 30, 1929, in accordance with the provisions of chapter 153, General Laws of Oregon, 1929, and that a part of the audit included an examination of all paid vouchers and warrants issued in payment thereof, and that the cost of auditing such vouchers and warrants is a proper charge against the several boards, institutions and commissions of the State of Oregon; and

I FURTHER CERTIFY, That the proportionate part of the expense of auditing warrants issued in payment of claims incurred by the State Highway Department has been charged against the following named account, viz:

State Highway Fund	$387.93

In Testimony Whereof, I have hereunto set my hand and affixed hereto the Seal of the State of Oregon.

Done at the Capitol at Salem, Oregon, this 7th day of February, A. D. 1930.

(SEAL)

HAL E. HOSS (Signed)
Secretary of State.

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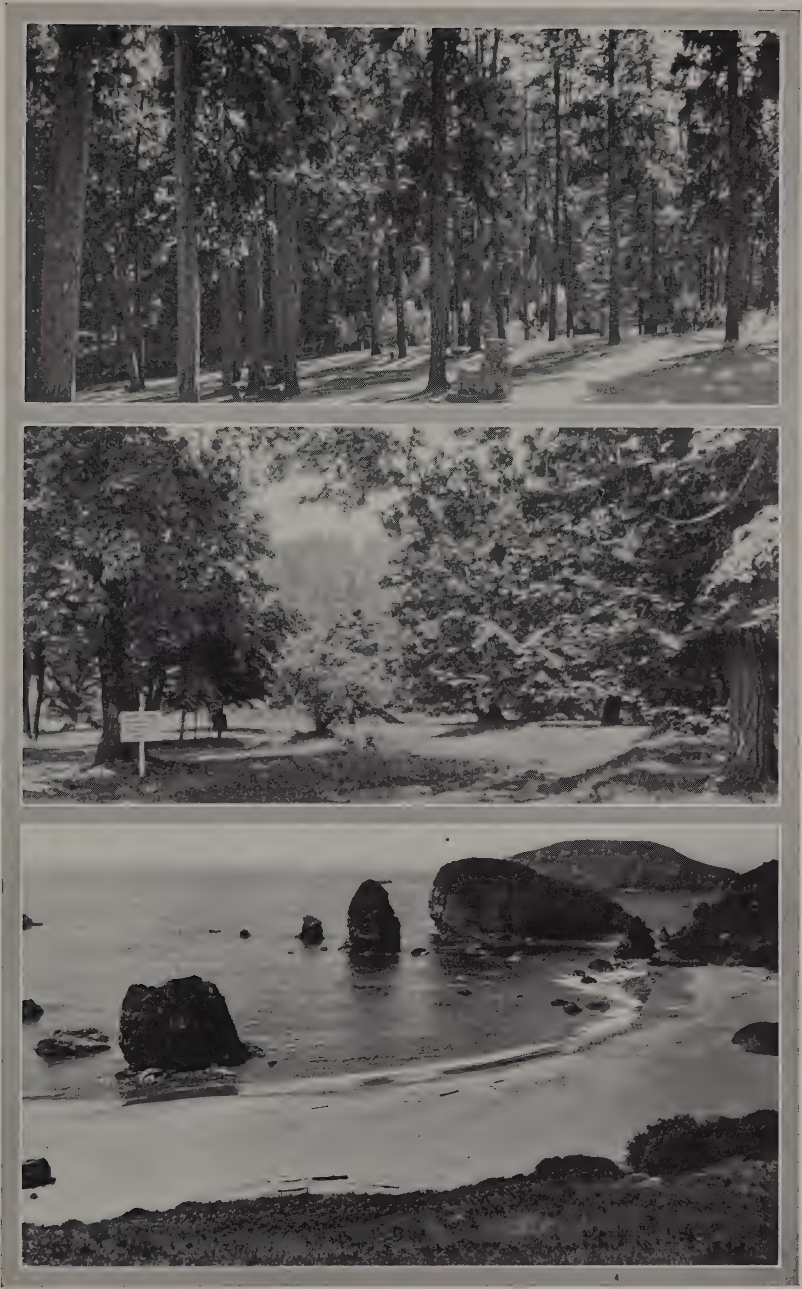
* The statement here referred to is on file in the office of the State Highway Commission.



VIEWS IN STATE PARKS: UPPER—SHELTON PARK SOUTH OF FOSSIL; CENTER—HELMICK PARK SOUTH OF MONMOUTH; LOWER—STATE PARK NORTH OF BROOKINGS

STATEMENT OF RECEIPTS AND DISBURSEMENTS BY MONTHS STATE HIGHWAY FUND AND MARKET ROAD FUND

December 1, 1928, to September 30, 1930

The receipts and disbursements listed under the head "State Highway Fund" include only such receipts and disbursements as are handled through the State Highway Fund. They should not be mistaken for the total receipts and disbursements incidental to state highway operations as a whole.

Month	State Highway Fund		Market Road Fund	
	Receipts	Disbursements	Receipts	Disbursements
Cash on hand, Dec. 1, 1928	$* 725,103.82	$	$	$
Deficit, Dec. 1, 1928			20,874.60	
December, 1928	723,580.85	464,884.43	460,716.11	441,271.47
January, 1929	332,222.96	435,225.53		2,879.81
February	289,814.32	355,589.58		Cr. 2,985.73
March	4,632,998.08	1,988,176.04		Cr. 793.81
April	452,690.65	516,577.85	2,722.22	871.24
May	403,863.39	651,163.50	407,543.68	275,867.65
June	422,501.90	672,394.13	150,900.25	273,102.46
July	631,599.24	911,657.38		2,165.93
August	517,961.38	785,064.40		2,262.16
September	648,597.05	2,252,442.80		1,750.33
October	1,738,901.04	1,054,919.09		2,205.94
November	534,309.48	526,568.97	384,700.05	251,639.05
December	400,733.93	588,035.68	176,465.98	300,435.48
January, 1930	525,412.95	406,593.45		763.13
February	289,564.46	282,638.94		524.90
March	2,284,562.94	2,033,377.02		1,260.81
April	747,146.72	744,400.21		1,663.28
May	637,797.44	755,246.83	474,523.64	553,455.54
June	559,680.55	1,145,173.05	87,970.76	1,406.78
July	800,621.03	1,258,039.63		1,753.58
August	1,166,483.96	1,366,130.67		1,986.09
September	4,741,533.66	3,221,779.38		2,858.95
Totals	$24,207,681.80	$22,416,078.56	$ 2,124,668.09	$ 2,116,345.04
Less disbursements	22,416,078.56		2,116,345.04	
Balance on hand, Oct. 1, 1930	$*1,791,603.24	$	$ 8,323.05	$

* Includes $75,000 in revolving fund, but does not include uncashed warrants on hand.

RECEIPTS AND APPORTIONMENTS OF MOTOR VEHICLE LICENSE FEES

For period from September 16, 1928, to September 15, 1930

The receipts listed in this table are the net receipts from the registering and licensing of motor vehicles, motor vehicle dealers, chauffeurs, and operators, and from other transactions incidental thereto. The collection and apportionment of these receipts is a function of the office of the Secretary of State.

County	Net Receipts Sept. 16, 1928 to Sept. 15, 1929	Net Receipts Sept. 16, 1929 to Sept. 15, 1930	Total Net Receipts Sept. 16, 1928 to Sept. 15, 1930	* Portion Turned Over to Counties	* Portion Turned Over to State Highway Fund	Percentage for Each County
Baker	$ 109,428.96	$ 122,726.45	$ 232,155.41	$ 68,144.22	$ 164,011.19	1.48
Benton	139,175.57	153,745.21	292,920.78	85,908.18	207,012.60	1.87
Clackamas	298,735.76	366,018.61	664,754.37	196,461.12	468,293.25	4.23
Clatsop	141,129.38	164,959.23	306,088.61	90,139.32	215,949.29	1.95
Columbia	122,883.49	143,309.96	266,193.45	78,373.71	187,819.74	1.70
Coos	210,510.08	237,564.70	448,074.78	131,606.51	316,468.27	2.85
Crook	26,541.69	27,493.72	54,035.41	15,766.06	38,269.35	.34
Curry	19,931.47	24,402.02	44,333.49	13,092.27	31,241.22	.28
Deschutes	123,970.56	135,596.20	259,566.76	76,069.40	183,497.36	1.65
Douglas	164,875.27	187,390.27	352,265.54	103,511.93	248,753.61	2.24
Gilliam	31,080.19	32,899.25	63,979.44	18,707.71	45,271.73	.41
Grant	34,332.71	44,372.54	78,705.25	23,326.07	55,379.18	.50
Harney	30,863.11	49,044.20	79,907.31	23,986.81	55,920.50	.51
Hood River	76,292.20	92,013.69	168,305.89	49,676.20	118,629.69	1.07
Jackson	274,471.99	326,966.32	601,438.31	177,304.01	424,134.30	3.83
Jefferson	15,674.00	18,483.53	34,157.53	10,063.15	24,094.38	.22
Josephine	87,310.08	102,549.96	189,860.04	55,908.76	133,951.28	1.21
Klamath	255,078.28	304,020.00	559,098.28	164,707.43	394,390.85	3.56
Lake	37,192.79	46,212.15	83,404.94	24,647.55	58,757.39	.53
Lane	398,924.47	460,006.28	858,930.75	252,692.65	606,238.10	5.47
Lincoln	63,727.87	62,190.11	125,917.98	36,609.39	89,308.59	.80
Linn	192,618.41	217,770.98	410,389.39	120,588.39	289,801.00	2.61
Malheur	69,819.60	84,387.33	154,206.93	45,477.45	108,729.48	.98
Marion	479,337.93	523,097.73	1,002,435.66	293,800.22	708,635.44	6.38
Morrow	38,352.96	40,921.36	79,274.32	23,196.20	56,078.12	.50
Multnomah	2,662,247.48	3,211,839.23	5,874,086.71	1,734,151.71	4,139,935.00	37.41
Polk	110,378.81	130,935.86	241,314.67	71,119.08	170,195.59	1.54
Sherman	32,922.89	33,993.87	66,916.76	19,543.05	47,373.71	.43
Tillamook	93,091.35	109,266.87	202,358.22	59,623.15	142,735.07	1.29
Umatilla	209,123.27	232,587.31	441,710.58	129,616.91	312,093.67	2.81
Union	126,361.33	145,246.04	271,607.37	79,867.06	191,740.31	1.73
Wallowa	44,763.27	50,357.16	95,120.43	27,930.61	67,189.82	.61
Wasco	102,247.27	115,851.00	218,098.27	64,079.25	154,019.02	1.39
Washington	219,085.12	256,532.11	475,617.23	140,092.63	335,524.60	3.03
Wheeler	18,503.92	20,187.22	38,691.14	11,333.30	27,357.84	.25
Yamhill	168,542.16	198,142.47	366,684.63	108,015.56	258,669.07	2.34
Totals	$7,229,525.69	$8,473,080.94	$15,702,606.63	$4,625,137.02	$11,077,469.61	100.00

SUMMARY

Period	Distributed to State and Counties as Above	Fees Refunded	Secretary of State's Administration Cost	Total Gross Amounts Collected
Sept. 16, 1928, to Sept. 15, 1929	$ 7,229,525.69	$ 4,155.89	$ 378,888.71	$ 7,612,570.29
Sept. 16, 1929, to Sept. 15, 1930	8,473,080.94	4,533.20	511,219.73	8,988,833.87
Totals for two-year period	$15,702,606.63	$ 8,689.09	$ 890,108.44	$16,601,404.16

*Previous to Jan. 1, 1930, counties' share was 25 per cent and state's share was 75 per cent. Subsequent to Jan. 1, 1930, counties' share was 33⅓ per cent and state's share was 66⅔ per cent.

STATEMENT SHOWING THE AMOUNTS OF STATE REVENUES FOR STATE HIGHWAY PURPOSES, THE DISBURSEMENTS FOR BOND INTEREST, MAINTENANCE AND OTHER FIXED EXPENSE, AND THE BALANCES AVAILABLE FOR NEW CONSTRUCTION AND BETTERMENT, 1917 TO 1932

The revenues and balances shown in this table do not include aid received from the federal government and from counties. Neither do they include amounts received from the sale of bonds.

Year	STATE HIGHWAY REVENUES					DISBURSEMENTS FOR BOND INTEREST, MAINTENANCE, ETC.					Balance Available for Construction and Betterment
	Motor Vehicle License Fees	Gasoline Tax *	Quarter-mill Property Tax	Miscellaneous Revenues	Total Revenues *	Interest and Maturities on Bonds	Maintenance	General Administration	Other Fixed Expense	Total Fixed Expense	
Actual											
1917	$ 150,000.00	$	$219,690.98	$	$ 369,690.98	$ 5,000.00	$	$ 34,130.80	$105,455.21	$ 144,586.01	$ 225,104.97
1918	425,000.00	....	232,151.39	....	657,151.39	72,900.00	822.99	63,491 02	121,387.97	258,601.98	398,549.41
1919	532,418.83	290,795.49	246,883.47	15,006.60	1,085,104.39	141,099.99	15,523.31	146,753.39	472,626.23	776,002.92	309,101.47
1920	1,481,122.75	404,050.16	247,608.87	17,375.77	2,150,157.55	503,725.00	93,001.91	203,933.77	335,180.62	1,135,841.30	1,014,316.25
1921	1,624,983.02	948,509.66	....	19,284.39	2,592,777.07	974,870.83	566,414.93	229,888.59	81,817.86	1,852,992.21	739,784 86
1922	2,358,987.02	1,127,147.73	....	40,124.95	3,526,259.70	1,646,266.67	735,663.46	175,622.76	158,514.58	2,716,067.47	810,192.23
1923	2,902,476.56	1,792,336.96	246,452.30	50,999.70	4,992,265.52	1,921,900.00	1,050,938.70	172,293.69	5,111.11	3,150,243.50	1,842,022.02
1924	3,419,808.55	2,560,184.67	255,863.20	81,587.56	6,317,443.98	2,158,740.00	1,664,897.16	164,123.22	66,065.11	4,053,825.49	2,263,618.49
1925	3,788,533.19	2,871,160.61	275,382.12	83,119.88	7,018,195.80	2,596,267.05	2,047,983.02	176,591.53	361,506.36	5,182,347.96	1,835,847 84
1926	4,260,000.00	3,292,973.91	....	71,930.99	7,624,904.90	2,919,761.65	2,291,745.56	187,085.86	132,001.98	5,530,595.05	2,094,309.85
1927	4,620,000.00	3,607,830.53	....	119,623.76	8,347,454.29	3,263,215.87	3,076,422.36	215,112.26	290,755 39	6,845,505.88	1,501,948.41
1928	4,926,609.20	3,972,956.80	....	137,498.51	9,037,064.51	3,336,060.99	3,295,107.30	194,703.87	262,448.04	7,088,320.20	1,948,744.31
1929	5,422,144.27	4,354,969.56	....	200,274.14	9,977,387.97	3,328,578.47	3,189,570.17	243,234.27	635,350.92	7,396,733.83	2,580,654.14
Estimated											
1930	†5,825,000.00	6,200,000.00	....	477,000.00	12,502,000.00	3,343,315.00	2,780,000.00	275,000.00	395,000.00	6,793,315.00	5,708,685.00
1931	4,265,000.00	6,500,000.00	....	330,000.00	11,095,000.00	3,361,522.18	2,930,000.00	280,000.00	485,000.00	7,056,522.18	4,038,477.82
1932	4,435,000.00	6,800,000.00	....	345,000.00	11,580,000.00	3,275,475.06	3,050,000.00	285,000.00	485,000.00	7,095,475.06	4,484,524.94

* The gasoline tax revenues here shown have been adjusted so that each represents exactly twelve months of income. They will not, therefore, check exactly with the amounts actually received during fiscal periods as these amounts are shown elsewhere in this report. Corresponding discrepancies will appear also in the amounts shown here in the column headed "Total Revenues."

† One and one-half year license fees were collected in 1930 due to change in registration year.

JOBS ADVERTISED AND CONTRACTS AWARDED

December 1, 1928, to September 30, 1930

Date of Receiving Bids	Contract Number	Project	Highway	Description of Work	No. of Bidders	Contract Awarded to
1928						
Dec. 19	1052	Rock Creek-Big Noise Creek	Columbia River	0.79 miles grading	14	Geo. Abraham
Dec. 19	1053	Lakeside Undercrossing Section	Roosevelt Coast	0.37 miles grading	6	Tom N. Hull
Dec. 19	1054	Lapine-Forest Boundary	Fremont Highway	12.13 miles grading	11	Wm. Endicott
Dec. 19	1055	Dairy-Bly Mountain	Klamath Falls-Lakeview	8.49 miles grading	6	Johnson Bros. Co.
Dec. 19	1056	Harper-Burrelle Ranch	Central Oregon	15.53 miles grading	8	W. H. Puckett & Co.
Dec. 19	1057	Lazinka Ranch-Albee	Pendleton-John Day	11.66 miles surfacing	18	Willamette Contract Co.
Dec. 19	1058	Morrow County Line-Umatilla	Columbia River	3.48 miles regrading and resurfacing	6	Geo. Abraham
Dec. 19	1059	Keyes Creek Summit-Fort Creek	Ochoco	8.02 miles grading	5	Earl McNutt
Dec. 19	1060	Bridge over Trask River	Roosevelt Coast	120 ft. steel span, 285 lin. ft. pile trestle	9	Gilpin Construction Co.
Dec. 19	1061	Bridge over Yamhill River	McMinnville-Tillamook	Two 50 ft. concrete spans	5	J. F. Johnston
1929						
Jan. 29	1062	Baker-Pleasant Valley	Old Oregon Trail	9.5 miles resurfacing, 12,000 cu. yds. betterment materials	9	Joslin & McAllister
Jan. 29	1063	Missouri Bend Section	Alsea Highway	6,700 cu. yds. maintenance materials	7	Meyers & Co.
Jan. 29	1064	The Dalles-John Day	Columbia River	45,000 cu. yds. betterment materials	13	H. E. Schmeer
Jan. 29	1065	Hilgard-La Grande	Old Oregon Trail	1.6 miles resurfacing, 9,500 cu. yds. betterment materials	7	Clyde R. Seitz
Jan. 29	1066	Bridge over Canyon Creek	Pacific	30 ft. concrete span	6	Rigdon Bros.
Jan. 29	1067	Bridge over Gate Creek	McKenzie	180 ft. concrete viaduct	7	Rigdon Bros.
Jan. 29	1068	Bridge over McKenzie River	McKenzie	100 ft. steel span, two 65 ft. cantilever approaches	7	Northwest Contract Co.
Jan. 29	1069	Springfield Bridge Approaches	McKenzie	15,000 cu. yds. embankment construction	10	A. C. Mathews
Mar. 8	1070	Quartz Station Section	Old Oregon Trail	0.81 miles grading	7	Quinn Bros. & Robbins
Mar. 8	1071	Endicott Creek-Mystic Creek	Coos Bay-Roseburg	25,500 cu. yds. maintenance materials	12	A. S. Wallace
Mar. 8	1072	Deer Creek-Shattuck Corner	Redwood	6.80 miles oiling, 10.77 miles bituminous macadam	4	J. C. Compton
Mar. 8	1073	Klamath Falls-Lakeview Junction	The Dalles-California	3.17 miles of grade widening	7	W. D. Miller Constr. Co.
Mar. 8	1074	Springfield-Cogswell Hill	McKenzie	7.40 miles grading	16	Cochran Construction Co.
Mar. 8	1075	DeMoss Springs-Grass Valley	Sherman	16.4 miles resurfacing	21	Knute Lien
Mar. 8	1076	Bridge over Alder Creek	Old Oregon Trail	44 ft. concrete span	9	R. F. Nichol
Mar. 8	1077	Bridges over Budd and Cunningham Creeks	Roosevelt Coast	Concrete culvert and 24 ft. concrete span	11	Hanson & Larson
Mar. 8	1078	Bridge over Malheur River	Central Oregon	Two 100 ft. steel and two 25 ft. concrete spans	10	J. J. Badraun
Mar. 8	1079	Storage Building at Corvallis	West Side Pacific	Equipment storage building	6	Barham Bros.
Mar. 8	1080	Storage Building at Sandy	Mt. Hood	Equipment storage building	6	J. Walter Creighton
Mar. 8	1081	Storage Building at La Grande	Old Oregon Trail	Equipment storage building	3	J. G. Gietlhuber

Mar. 29	1082	Corvallis-Kline's Mill	Corvallis-Newport	12.7 miles resurfacing	6	J. H. Gallagher
Mar. 29	1083	Sage Hen Hill-Burns	Central Oregon	13.1 miles surfacing	16	Wren & Greenough
Mar. 29	1084	Greenleaf Creek-Low Pass Summit	Siuslaw	12.3 miles resurfacing	9	Holdener Constr. Co.
Mar. 29	1085	Snake River Slides	Old Oregon Trail	8.0 miles regrading and resurfacing	10	J. W. & J. R. Hillstrom
Mar. 29	1086	Lostine-Enterprise	Wallowa Lake	7.67 miles resurfacing	12	Hart Construction Co.
Mar. 29	1087	Bridge over North Powder River	Old Oregon Trail	54 ft. steel span on existing abutments	4	Rudolph K. Krausse
Mar. 29	1088	Bridges, Bandon-Curry County Line	Roosevelt Coast	80 ft. concrete viaduct, two concrete culverts	10	John R. Dickson
April 19	1089	Canemah-New Era Section	Pacific	4.4 miles concrete paving	7	George C. Arenz
April 19	1090	Pilot Butte-Horse Ridge	Central Oregon	10.7 miles regrading	9	G. C. Johnson
April 19	1091	Unit 3, Lakeview-California Line	Fremont	5.98 miles grading	3	M. P. Pou
April 19	1092	Bridge over Skipanon River	Roosevelt Coast	One 36 ft. steel lift and two 45 ft. concrete spans	11	Clackamas Constr. Co.
May 23	....	*Summit-Lincoln County Line	Benton County Market Road	1.7 miles grading	12	Yunker-Wiecks Co.
May 23	1093	Waldport-Yachats	Roosevelt Coast	8.82 miles grading	8	Edlefson-Weygandt Co.
May 23	1094	Bridge over Central Oregon Canal	Central Oregon	Two 27 ft. concrete spans	4	Rudolph K. Krausse
May 23	....	Pile Trestle over Haynes Slough	Roosevelt Coast	29 ft. pile trestle and tide gate	....	No bids received
May 23	1095	Bridge over Big Creek	Roosevelt Coast	120 ft. concrete viaduct	9	C. A. Catching
May 23	....	Storage Building at Paisley	Fremont	Equipment storage building	2	Bids rejected
May 23	1096	Storage Building at Ontario	Old Oregon Trail	Equipment storage building	4	A. G. Plant Co.
June 5	1097	Aloha Section	Tualatin	Moving13 buildings	1	F. L. Hewitt
June 27	1098	Approaches to Scottsburg Bridge	Umpqua	0.86 miles grading	8	Johnson & Co.
June 27	1099	Keene Creek-Jenny Creek	Green Springs	6.67 miles regrading and resurfacing	9	Washburn & Hall
June 27	1100	Klamath Falls-Lakeview Jct.	The Dalles-California	3.81 miles concrete paving	4	W. D. Miller Constr. Co.
June 27	1101	Springfield-Cogswell Hill	McKenzie	7.40 miles surfacing	11	Cochran Construction Co.
June 27	1102	Black Canyon Section	Willamette	3.31 miles grading	8	Slate Construction Co.
June 27	1103	Approaches to McKenzie and Gate Creek Bridges	McKenzie	1.46 miles grading	6	Earl L. McNutt
June 27	1104	Bridge over Salmon River	Mt. Hood	100 ft. steel span, 120 ft. concrete approach	7	Rigdon Bros.
June 27	1105	Pile Trestle over Haynes Slough	Roosevelt Coast	29 ft. pile trestle and tide gate	3	A. H. Kingsbury
June 27	....	*Bridge over Bear Creek	Jackson County Road	90 ft. steel pony truss, 158 ft. pile trestle	5	Referred to County Court
June 27	....	*Bridge over Deep Creek	Lake County Road	45 ft. frame truss, 46 ft. frame trestle	1	Referred to County Court
June 27	1106	Bridge over Indian Creek	Siuslaw	160 ft. concrete viaduct	9	Peart Bros.
June 27	....	*Two Bridges over Mill Creek	Marion County Road	104 ft. concrete viaduct, 51 ft. concrete span	7	Referred to County Court
June 27	....	*Bridge over Pudding River	Marion County Road	120 ft. steel span, 84 ft. trestle	6	Rigdon Bros.
June 27	....	Bridge over Bridge Creek	Ochoco	88 ft. concrete viaduct	2	Rejected
July 25	....	Riverton-Bandon-South	Roosevelt Coast	12.0 miles resurfacing	4	Rejected
July 25	1107	Red Bridge-Drain	Umpqua	10.1 miles grading	16	Peck & Einerson
July 25	1108	Fort Creek-Barnhouse Ranch	Ochoco	6.95 miles grading	14	H. E. Cornell
July 25	1109	Two Bridges, Drain-Red Bridge	Umpqua	88 ft. and 52 ft. concrete viaducts	9	C. A. Catching
July 25	1110	Tualatin River and Cedar Creek Bridges	West Side	150 ft. steel deck truss, 360 ft. concrete approaches and 8 ft. x 8 ft. culvert	10	Northwest Contract Co.
July 25	1111	Bridge over Bridge Creek	Ochoco	88 ft. concrete viaduct	5	Edward Krieg
Aug. 6	1112	Springfield Bridge Approach	McKenzie	Three 50 ft. concrete spans	7	Hargreaves & Lindsey
Aug. 29	1113	Haines-North Section	Old Oregon Trail	5,600 lin. ft. drainage ditch	6	Morrison-Knudsen Co.

* County contract.

JOBS ADVERTISED AND CONTRACTS AWARDED—Continued

Date of Receiving Bids	Contract Number	Project	Highway	Description of Work	No. of Bidders	Contract Awarded to
1929						
Aug. 29	1114	Big Noise Creek-Gnat Creek	Columbia River	2.19 miles grading	3	John Slotte & Co.
Aug. 29	1115	Riverton-Bandon-South	Roosevelt Coast	12.0 miles resurfacing	3	Newport & Pyle
Aug. 29	1116	Mountain Rest-Little Beech Creek	Pendleton-John Day	7.18 miles grading	6	Morrison-Knudsen Co.
Aug. 29	1117	Hines Mill-Burns	Central Oregon	2.74 miles surfacing	3	C. E. Silbaugh
Aug. 29	1118	Dairy-Bly Mountain-Bonanza	Klamath Falls-Lakeview	21.1 miles surfacing	5	Joslin & McAllister
Aug. 29	1119	Lakeview-California Line	Fremont	15.29 miles surfacing	7	L. F. Ireton
Aug. 29	1120	Kamela-Hilgard	Old Oregon Trail	14.53 miles regrading	5	E. L. Gates
Aug. 29	1121	Gnat and Ferris Creek Bridges	Columbia River	165 ft. concrete viaduct, 8 ft. x 8 ft. culvert	10	Clackamas Constr. Co.
Aug. 29	1122	Storage Building at Paisley	Fremont	28 ft. x 48 ft. equipment storage building	1	John J. Cunningham
Aug. 29	....	*Bridge over Tualatin River	County Market Road	100 ft. steel span with pile trestle approaches	9	Referred to County Court
Sept. 26	1123	Cunningham Creek Bridge Approaches	Roosevelt Coast	700 lin. ft. embankment construction	6	Tom N. Hull
Sept. 26	1124	"L" Street (Reedsport) Section	Umpqua	0.57 miles grading and surfacing	4	Liesch & Tofte
Sept. 26	1125	Medford-Phoenix	Pacific	5.87 miles paving	5	L. O. Herrold
Sept. 26	1126	Glenada Section	Roosevelt Coast	1.2 miles grading	13	Yunker-Wiecks Co.
Sept. 26	1127	Neskowin-Otis	Roosevelt Coast	10.94 miles regrading and resurfacing	7	Milne & Dussault
Sept. 26	1128	Tryon Creek Culvert	Pacific	8 ft. x 8 ft. reinforced concrete culvert	11	E. F. Balgemann
Sept. 26	1129	Storage Building at Salem	Pacific	48 ft. x 264 ft. frame storage building	9	F. S. Odom
Oct. 30	1130	Rhododendron-Government Camp	Mt. Hood	10 19 miles resurfacing	13	Morrison Trucking Co.
Oct. 30	1131	Horse Ridge-Dry River	Central Oregon	8.40 miles regrading	7	Henry C. Boyer
Oct. 30	1132	Harper-Vale	Central Oregon	15.30 miles surfacing, 7.01 miles resurfacing	11	Joslin & McAllister
Oct. 30	1133	Tillamook County Line-Grand Ronde	Salmon River Road	6.39 miles surfacing	7	J. H. Gallagher
Oct. 30	1134	Bridge over U. S. R. S. Canal	The Dalles-California	90 lin. ft. concrete viaduct	7	James L. Quinn
Oct. 30	1135	Storage Building at Burns	Central Oregon	28 ft. x 84 ft. frame building	4	R. H. Jones
Oct. 30	1136	Storage Building at Pendleton	Old Oregon Trail	28 ft. x 160 ft. frame building	12	R. H. Jones
Dec. 12	1137	Pleasant Valley-Durkee	Old Oregon Trail	12.4 miles regrading and resurfacing	7	Quinn-Robbins Co.
Dec. 12	1138	Lincoln County Line-Alsea Mountain	Alsea	4.14 miles resurfacing	7	Joplin & Eldon
Dec. 12	1139	East Forest Boundary-Silver Lake	Fremont	19.77 miles grading	10	Wm. Endicott
Dec. 12	....	Nimrod-Belknap Springs	McKenzie	21.0 miles resurfacing	7	Bids rejected
Dec. 12	1140	Yachats-Lane County Line	Roosevelt Coast	2 85 miles grading	9	Wren & Greenough
Dec. 12	1141	Ranger Station-Bryant Hill	Santiam	1.87 miles grading	15	Harmon & Tittle
Dec. 12	1142	Rogue River Bridge at Grants Pass	Pacific	Three 150 ft. and two 50 ft. concrete spans	8	Northwest Contract Co.
1930						
Jan. 16	....	Jenny Creek-Keno	Green Springs	27.1 miles resurfacing	5	Bids rejected
Jan. 16	1143	Nimrod-Belknap Springs	McKenzie	21.0 miles resurfacing	7	Willamette Contracting Co. (defaulted)

Jan. 16	1144	Yaquina Bay-South Beach	Roosevelt Coast	1.0 mile grading and ferry slip	11	H. P. Nass
Jan. 16	1145	Beaverton-Multnomah County Line	Tualatin Valley	3.9 miles concrete paving	8	I. L. Young
Jan. 16	1146	Barnhouse Ranch-Picture Gorge	Ochoco	10.0 miles grading	14	J. W. Feak Constr. Co.
Jan. 16	1147	Beaver Creek Bridge	Columbia River	39 ft. concrete span	12	Rigdon Bros.
Jan. 16	1148	Rogue River Bridge	Roosevelt Coast	Seven 230 ft. concrete arch spans and 328 ft. concrete approaches	7	Mercer-Fraser Co.
Feb. 27	1149	Unit "B" Lake County Line-Gap Ranch	Central Oregon	0.17 miles grading	....	George H. Jacobsen
Feb. 27	1150	Denmark-Port Orford	Roosevelt Coast	10.83 miles regrading and resurfacing	12	Saxton & Looney
Feb. 27	1151	Jenny Creek-Keno	Green Springs	27.1 miles surfacing	4	Wren & Greenough
Feb. 27	1152	Klamath Falls Oiling Project	The Dalles-California, Green Springs, and Klamath Falls-Lakeview	43 6 miles bituminous macadam	7	J. C. Compton
Feb. 27	1153	Glenada-Douglas County Line	Roosevelt Coast	6.36 miles grading	11	Cochran Construction Co.
Feb. 27	1154	Vale Oiling Project	Old Oregon Trail, John Day, and Central Oregon	11.4 miles bituminous macadam and 65.3 miles oiling	3	J. C. Compton
Feb. 27	1155	Portland-Hood River	Columbia River	40,000 cu. yds. crushed rock	9	Knute Lien
Feb. 27	1156	Kamela-Hilgard	Old Oregon Trail	14.53 miles surfacing	14	H. G. Johnson
Feb. 27	1157	Necanicum River Bridge	Roosevelt Coast	172 ft. concrete viaduct	14	F. L. Odom
Feb. 27	1158	Wahanna Creek Bridge	Roosevelt Coast	210 ft. concrete viaduct	10	F. L. Odom
Feb. 27	....	Klamath River Bridge at Keno	Green Springs	Three 100 ft. concrete spans, 60 ft. approach	3	Bids rejected
Feb. 27	....	*Old Willamette River Bridge at Springield	McKenzie	Dismantle and reconstruct on county road east of Creswell	5	O. N. Pierce
Feb. 27	1159	Rockaway Creek Culvert	Roosevelt Coast	4 ft. x 5 ft. concrete box culvert	7	Feldschau & Son
Feb. 27	1160	Grand Ronde River Bridge	Old Oregon Trail	Six 50 ft. concrete spans	8	O. N. Pierce
Feb. 27	1161	Unit 1, Willamette Valley Rock Project	Tualatin Valley	4,400 cu. yds. crushed rock	2	Ross Island Sand & Gravel Co.
Feb. 27	1162	Unit 2, Willamette Valley Rock Project	West Side & McMinnville-Tillamook	6,320 cu. yds. crushed rock	4	Dayton Sand & Gravel Co.
Feb. 27	1163	Unit 4, Willamette Valley Rock Project	Pacific & West Side Pacific	8,700 cu. yds. crushed rock	2	Eugene Sand & Gravel Co.
Feb. 27	1164	Unit 5, Willamette Valley Rock Project	Pacific	6,300 cu. yds. crushed rock	3	J. H. Gallagher
Mar. 27	1165	Part of Unit 3, Willamette Valley Rock Project	Salem-Dallas	6,270 cu. yds. crushed rock	3	Oregon Sand & Gravel Co.
Mar. 27	1166	Multnomah County Line-Oswego	Pacific	0.92 miles regrading	12	W. H. Hauser
Mar. 27	1167	Cannon Beach Junction-Nehalem Summit	Roosevelt Coast	12,000 cu. yds. crushed rock	10	Arthur Gentemann
Mar. 27	1168	Tahkenitch-Gardiner Summit	Roosevelt Coast	3.17 miles grading	9	A. C. Greenwood
Mar. 27	1169	Scottsburg-Burchard Creek	Umpqua	4.43 miles grading	13	Harmon & Tittle
Mar. 27	1170	Mountain Rest-Little Beech Creek	Pendleton-John Day	7.18 miles surfacing	11	Hart Construction Co. (defaulted)
Mar. 27	1171	Nimrod-Belknap Springs	McKenzie	21.0 miles resurfacing	6	J. W. &. J. R. Hillstrom
Mar. 27	1172	Tunnel-Harper	Central Oregon	13.31 miles grading	9	J. A. Terteling & Sons

* County contract.

JOBS ADVERTISED AND CONTRACTS AWARDED—Continued

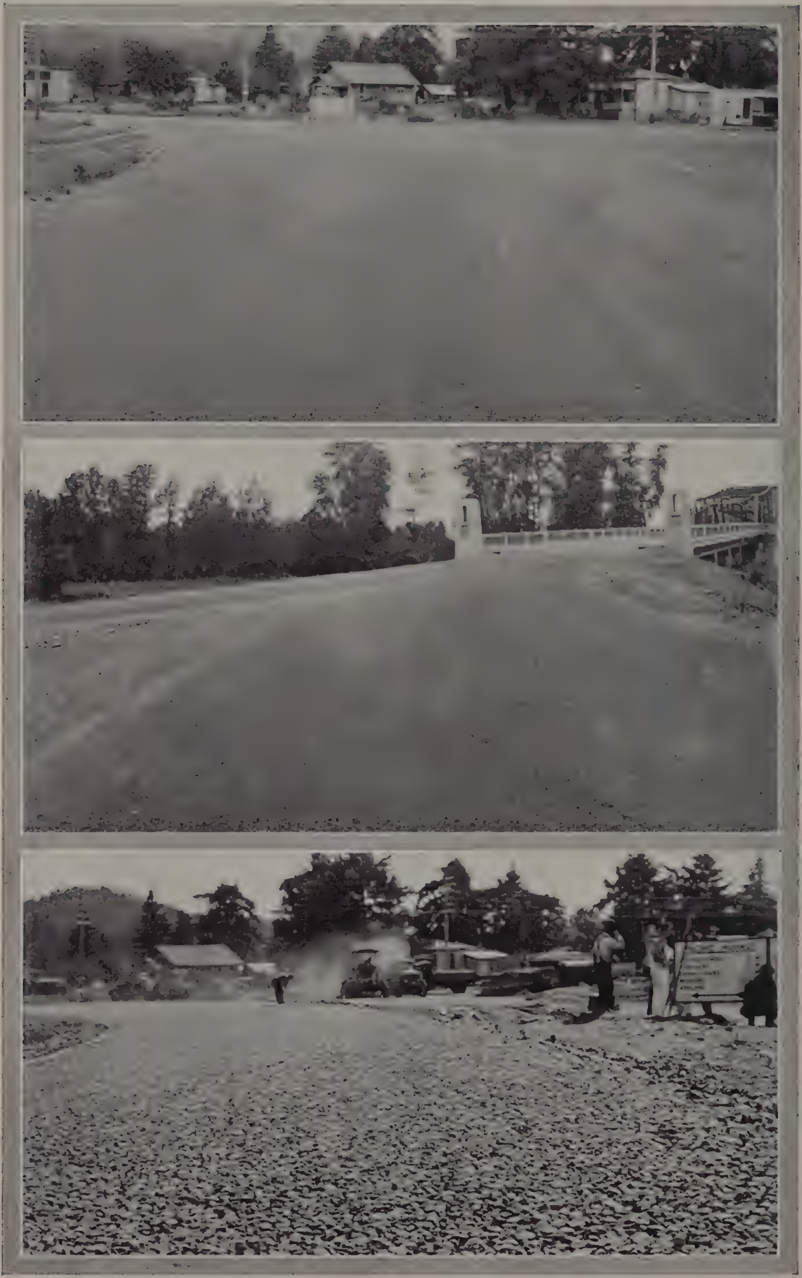
Date of Receiving Bids	Contract Number	Project	Highway	Description of Work	No. of Bidders	Contract Awarded to
1930						
Mar. 27	1173	Houlton Section	Columbia River	Moving 24 frame buildings	5	A. C. Baumback
Mar. 27	1174	Larson Slough Bridge	Roosevelt Coast	30 ft. timber bridge	5	Tom Lillebo
Mar. 27	1175	Wells, Golden & Burchard Creek Bridges	Umpqua	150 ft. concrete bridge, 6 ft. x 6 ft. and 8 ft. x 8 ft. concrete culverts	13	C. A. Catching
Mar. 27	1176	Klamath River Bridge at Keno	Green Springs	Three 100 ft. concrete spans and 60 ft. approach	3	Clackamas Constr. Co.
Mar. 27	1177	Alsea Bay Ferry Slip and Approaches	Roosevelt Coast	Timber slip and approaches	5	J. F. Johnston
Mar. 27	1178	Part of Unit 3, Willamette Valley Rock Project	West Side Pacific	2,890 cu. yds. crushed rock	3	J. H. Gallagher
Mar. 27	......	*Bridge over Little Pudding River	Marion County Road	100 ft. concrete span	9	Referred to County Court
Mar. 27	......	The Dalles Oiling Project	The Dalles-Caliornia, and Columbia River	16.0 miles bituminous macadam, 23.3 miles oil macadam and 48.2 miles non-skid surface	5	Contract defaulted
April 18	1180	Altamont Canal Section	The Dalles-California	327 lin. ft. concrete paving	....	W. D. Miller Constr. Co.
April 18	1181	Miles Crossing-Cannon Beach Junction	Roosevelt Coast	6,900 cu. yds. crushed gravel	....	Carl Habecost
April 24	1182	Gold Beach-Myers Creek	Roosevelt Coast	11.0 miles resurfacing	4	Saxton & Looney
April 24	1183	Dry River-Millican	Central Oregon	6.8 miles grading	13	Johnson Brothers Co.
April 24	1184	Bend-Horse Ridge	Central Oregon	18.0 miles surfacing	9	J. W. Feak Constr. Co.
April 24	1185	Mountain Rest-Little Beech	Pendleton-John Day	7.18 miles surfacing	6	March Construction Co.
April 24	1186	Berry Creek-Sutton Lake	Roosevelt Coast	3.90 miles grading	10	Earl L. McNutt
April 24	1187	Pioneer Mountain-Eddyville	Corvallis-Newport	10.1 miles regrading	10	S. H. Newell & Co.
April 24	1188	Eugene Oiling Project	Santiam, Pacific, and Corvallis-Newport	31.2 miles bituminous macadam and 30.11 miles non-skid surface	4	F. J. Kernan
April 24	1189	The Dalles Oiling Project	The Dalles-California, and Columbia River	16.0 miles bituminous macadam, 23.3 miles oil macadam and 48.2 miles non-skid surface	3	J. F. Forbes
April 24	1190	Coos Bay Ferry Slips	Roosevelt Coast	Timber slips and approaches	6	Tom Lillebo
April 24	1191	Bridge over Siltcoos River	Roosevelt Coast	172 ft. concrete viaduct	5	Liesch & Tofte
April 24	1192	Bridge over Sutton Creek	Roosevelt Coast	110 ft. concrete viaduct	4	Liesch & Tofte
April 24	1193	Bridge over Camas Swale	Pacific	120 ft. concrete viaduct	6	Hargreaves & Lindsay
April 24	......	*Seven Bridges in Marion County	County Market Roads	Six concrete bridges, one triple 4 ft. x 6 ft. box culvert	9	E. F. Balgemann
April 24	1194	Building and Platform at Salem Shops	....	Storage building, 24 ft. x 77 ft. and platform	13	A. J. Anderson
April 24	......	Building at Emigrant Park	Old Oregon Trail	Frame building, 22 ft. x 42 ft.	6	Bids rejected

May 22	1195	Red Bridge-Drain	Umpqua	10.1 miles surfacing	6	A. S. Wallace
May 22	1196	Hendricks Bridge-Doyle Hill	McKenzie	9.27 miles grading	10	Earl L. McNutt
May 22	1197	Waldport & Walport-Lane County Line	Alsea and Roosevelt Coast	13.27 miles surfacing	5	Edlefson-Weygandt Co.
May 22	......	La Grande Bituminous Macadam Project	Old Oregon Trail, and Wallowa Lake	22.73 miles bituminous wearing surface	3	Bids rejected
May 22	1198	Building at Emigrant Park	Old Oregon Trail	Frame building, 22 ft. x 42 ft.	6	O. N. Pierce
June 26	1199	Storage Building at Coquille		Frame building, 48 ft. x 96 ft.	10	Styris & Granstrom
June 26	1200	Bridge over Eugene Power Canal	McKenzie	150 ft. concrete viaduct	4	H. E. Wilder Co.
June 26	1201	Haynes Slough, Larson Slough and Russell Point Section	Roosevelt Coast	1.29 miles grading	9	Joplin & Eldon
June 26	1202	Triangle Lake-Low Pass Summit	Siuslaw	13 200 cu. yds. broken stone	3	L. D. Packard
June 26	1203	La Grande-Hot Lake Section	Old Oregon Trail	7.96 miles grade widening	7	Union Construction Co.
June 26	1204	Wapinitia-Maupin Junction	Wapinitia	7.4 miles grading	16	Barnet & Mitchell
June 26	1205	Mitchell-Willow Creek	Ochoco	18.0 miles surfacing	9	Milne & Dussault
June 26	1206	Shop Building at Klamath Falls		Frame addition, 48 x 68 ft.	3	Cherry & Harrison
June 26	1207	Multnomah County Line-Middleton	West Side Pacific	9.3 miles regrading and shoulder construction	11	J. A. Lyons
June 26	1208	Multnomah County Line-Sandy	Mt. Hood	6.80 miles concrete paving	6	Jacobsen-Jensen Co.
June 26	1209	Pioneer Mountain-Eddyville	Corvallis-Newport	10.1 miles surfacing	2	C. L. Camp
June 26	......	*Bridge over Drift Creek	Marion County Road	88 ft. concrete viaduct	8	Edward Krieg
June 26	1210	Dolph-Valley Junction	McMinnville-Tillamook	6,500 cu. yds. crushed gravel	1	J. H. Gallagher
July 24	......	*County Road Project near Summit	Benton and Lincoln County Roads			
July 24	1211	Silver Creek-Sage Hen Hill	Central Oregon	5.47 miles surfacing	3	Frank M. Bullis
July 24	1212	Tangent-Shedd	Pacific	10.66 miles grading	10	C. E. Silbaugh
July 24	1213	Dead Ox Flat and Weiser Spur	Old Oregon Trail	2.37 miles grade widening	11	Earl L. McNutt
July 24	1214	Clow Corner-Monmouth	West Side Pacific	10.0 miles regrading and resurfacing	5	Newport Construction Co.
July 24	......	Pleasant Valley-Hemlock	Roosevelt Coast	2.8 miles grade widening	13	Earl L. McNutt
July 24	1215	Bridge over Myrtle Creek	Pacific	3.0 miles resurfacing	2	All bids rejected
July 24	......	Traffic Barriers on Interstate Bridge	Pacific	120 ft. concrete structure	9	Hargreaves & Lindsay
July 24	1216	Bridge over Rock Creek	Ochoco	Yielding barriers and Neon signs	4	All bids rejected
July 24	1217	Baker-Pleasant Valley	Old Oregon Trail	150 ft. concrete structure	5	Kuckenberg-Wittman Co.
Aug. 28	1218	Haines-Baker	Old Oregon Trail	9.41 miles bituminous wearing surface	1	J. C. Compton
Aug. 28	1219	Necanicum and Wahanna Bridge Approaches	Roosevelt Coast	5.7 miles regrading and resurfacing	11	Joslin & McAllister
				Grading	11	R. L. Houck
Aug. 28	1220	Pleasant Valley-Hemlock	Roosevelt Coast	3.0 miles resurfacing	6	Joslin & McAllister
Aug. 28	1221	Storage Buildings at Baker and Austin	Old Oregon Trail, and John Day	Frame buildings, 28 ft. x 152 ft.	6	R. H. Jones
Aug. 28	1222	Widen Bridge over Milton Creek	Columbia River	36 ft. roadway and 7 ft. walk on West Side	3	C. J. Montag
Aug. 28	1223	Bridges over Dobbin, Wolf and Canyon Creeks	Santiam	Two 30 ft. and one 40 ft. concrete spans, two 20 ft. and one 40 ft. concrete spans, one 40 ft., one 50 ft., and one 70 ft. concrete spans respectively	13	C. A. Catching

* County contract.

JOBS ADVERTISED AND CONTRACTS AWARDED—Continued

Date of Receiving Bids	Contract Number	Project	Highway	Description of Work	No. of Bidders	Contract Awarded to
1930						
Aug. 28	1224	Bridges over Hoquarton, Dougherty and Hall Sloughs	Roosevelt Coast	Two 30 ft. and one 46 ft. 6-in. concrete spans, two 40 ft. and one 50 ft. concrete spans, and two 40 ft. concrete spans respectively	11	Clackamas Constr. Co.
Aug. 28	1225	Juno Over-crossing	Roosevelt Coast	Three 60 ft. concrete spans	13	Clackamas Constr. Co.
Aug. 28	1226	Bridges over Wilson River and Wilson River Slough	Roosevelt Coast	Two 30 ft. concrete spans, one 120 ft. arch, and two 37 ft. and one 46 ft. concrete spans respectively	8	Clackamas Constr. Co.
Sept. 9	1227	Multnomah County Line-Oswego	Pacific	215 ft. parapet wall	1	Tony Tuss
Sept. 25	1228	Silver Lake-Picture Rock Pass	Fremont	13.53 miles grading	9	Union Construction Co.
Sept. 25	1229	Speery-R. R. Tunnel	Central Oregon	6.01 miles grading	12	E. C. Peck & Co.
Sept. 25	....	Mt. Hood-Bear Springs	Wapinitia	14,000 cu. yds. broken stone	7	All bids rejected
Sept. 25	1230	Traffic Barriers on Interstate Bridge	Pacific	Yielding barriers and Neon signs	3	R. M. Bunten Co.



THREE VIEWS OF BITUMINOUS MACADAM WEARING SURFACE CONSTRUCTED AT THE WEST APPROACH TO THE McKENZIE RIVER BRIDGE AT SPRINGFIELD

PART TWO

Report
OF THE
State Highway Engineer
TO THE
State Highway Commission
OF THE
State of Oregon
1929-1930

ROY A. KLEIN, State Highway Engineer

LETTER OF TRANSMITTAL

Salem, Oregon, October 1, 1930.

TO THE HONORABLE STATE HIGHWAY COMMISSION:

H. B. VAN DUZER, Chairman.
C. E. GATES, Commissioner.
M. A. LYNCH, Commissioner.

Gentlemen:

I have the honor to submit to you herewith the report of the State Highway Engineer for the period, December 1, 1928, to September 30, 1930.

I take this opportunity to express my confidence in your judgment in deciding on matters of policy and my appreciation of the earnest and conscientious service you have given the state in carrying out the state highway program. Acknowledgment is made of the united efforts of the many loyal and efficient employes of the department to whom is due whatever credit is deserved for the work accomplished.

Respectfully,
ROY A. KLEIN,
State Highway Engineer.

Report of the

State Highway Engineer

TO THE

State Highway Commission

Dec. 1, 1928, to Sept. 30, 1930

PROGRESS IN STATE HIGHWAY IMPROVEMENT

During the two-year period with which this report is concerned, the construction and improvement of state highways have gone forward steadily, and the progress made in that direction has been somewhat greater than was made during the two-year period immediately preceding. Two factors have combined to make this greater progress possible; the first and most important of these being the increased amount of revenue derived from motor vehicle license fees during the year 1930; and the second being the increased amount of federal aid made available by Congress. The increased amount of revenue derived from motor vehicle license fees during the year 1930 came about as a result of the action of the last Legislature in changing the beginning date of the motor vehicle license year from January first to July first. This change caused payment to be made during the year 1930, of license fees for nearly one and one-half years, thus increasing the revenues from that source by nearly 50 per cent. The increase in amount of federal aid available was made by Congress as a means of relieving, to such extent as it would, the existing unemployment situation. Oregon's share of the increase amounted to $800,000 during the year 1930 and will continue at the same rate during the years 1931 and 1932.

Expressed in miles of work performed, the progress made in the improvement of state highways, including the forest road work supervised by the United States Bureau of Public Roads, as well as the work supervised by the State Highway Commission, was as follows:

Kind of Work	Constructed by Highway Commission (Miles)	Constructed by Bureau of Public Roads (Miles)	Total (Miles)
New Construction Work—			
Paving	10.1	--------	10.1
Bituminous macadam	231.5	--------	231.5
Rock and Gravel Surfacing	124.9	31.9	156.8
Grading	273.7	43.8	317.5
Betterment Work—			
Repaving	14.9	--------	14.9
Non-skid Treatment	227.0	--------	227.0
Oiling	377.7	--------	377.7
Resurfacing	255.8	--------	255.8
Regrading	195.6	5.5	201.1

In addition to the improvement work here expressed on a mileage basis, the Highway Commission has constructed, during the biennium, 50 bridge structures of lengths averaging from 20 feet to 1,900 feet and having an aggregate value of approximately $1,200,000.

Adding the mileages of new construction work accomplished during 1929 and 1930, to the mileages previously completed and to the mileages of completed work upon state highway routes within incorporated cities and towns, and within Multnomah County, gives the following as the status of state highway improvement as of December 31, 1930: 906.6 miles paved, 323.7 miles surfaced with bituminous macadam, 1,370.9 miles surfaced with oiled macadam, 1,009.1 miles surfaced with unoiled macadam, 408.7 miles graded and ready for surfacing and 339.7 miles unimproved; the term unimproved, as here used meaning not graded to state highway standards of width, grade and alignment. Expressed on a percentage basis, the 4,358.7 miles of highways in the state highway system are now 20.8 per cent paved, 7.4 per cent surfaced with bituminous macadam, 32.4 per cent surfaced with oiled macadam, 23.2 per cent surfaced with unoiled macadam, 9.4 per cent graded and ready for surfacing, and 7.8 per cent unimproved.

The larger and more noteworthy of the one hundred and fifty or more projects completed during the two-year period are as follows:—

Kind of Work—	*Highway—*	*Section—*	*Miles*
Paving	Pacific	Canemah-New Era	4.4
Paving	Pacific	Medford-Phoenix	5.9
Paving	Tualatin Valley	Beaverton-Multnomah County Line	3.9
Paving	Mt. Hood	Sandy-Multnomah County Line	6.1
Paving	The Dalles-California	Klamath Falls-Lakeview Junction	3.9
Bituminous Macadam	Roosevelt	Cannon Beach Junction-Nehalem Summit	13.2
Bituminous Macadam	Roosevelt	Clatsop County Line-Garibaldi	11.9
Bituminous Macadam	Roosevelt	Hebo-Neskowin	13.0
Bituminous Macadam	Roosevelt	Siletz River-Otter Rock	8.4
Bituminous Macadam	Roosevelt	Denmark-Port Orford	5.5
Bituminous Macadam	Crater Lake	Prospect-Park Boundary	21.7
Bituminous Macadam	Santiam	Lebanon-Foster	17.6
Bituminous Macadam	Green Springs	Klamath Falls-West	12.6
Bituminous Macadam	The Dalles-California	Klamath Falls-Merrill	13.6
Bituminous Macadam	Klamath Falls-Lakeview	Klamath Falls-Bly Mt.	16.6
Bituminous Macadam	Sherman	DeMoss Springs-Grass Valley	15.9
Bituminous Macadam	Wallowa Lake	Lostine-Enterprise	7.7
Bituminous Macadam	Old Oregon Trail	Baker-Pleasant Valley	9.4
Bituminous Macadam	Old Oregon Trail	Snake River Slides	8.0
Rock Surfacing	Santiam	Lebanon-Sheas Hill	15.2
Rock Surfacing	Ochoco	Mitchell-Keyes Creek Summit	7.0
Rock Surfacing	Central Oregon	Sage Hen Hill-Burns	13.1
Grading and Surfacing	McKenzie	Springfield-Cogswell Hill	7.4
Grading and Surfacing	Klamath Falls-Lakeview	Dairy-Bly Mt.	8.7
Grading and Surfacing	Pendleton-John Day	Mt. Rest-Little Beech Creek	7.2
Grading and Surfacing	Central Oregon	Harper-Vale	15.3
Grading	Central Oregon	Bend-Millican	15.2
Grading	Central Oregon	Hampton-Sage Hen Hill	57.1
Grading	Roosevelt Coast	Newport-Waldport	10.0
Grading	Roosevelt Coast	Waldport-Lane Co. Line	11.6

Kind of Work—	*Highway—*	*Section—*	*Miles*
Grading	Roosevelt Coast	Berry Creek-Sutton Lake	3.9
Grading	Roosevelt Coast	Glenada-Douglas County Line	7.2
Grading	Roosevelt Coast	Tahkenitch-Gardiner Summit	3.2
Grading	Fremont	Lapine-Summer Lake	40.0
Grading	Ochoco	Mitchell-Dayville	23.8
Grading	Wapinitia	Wapinitia-Maupin	7.4
Regrading and Resurfacing	Old Oregon Trail	Kamela-La Grande	19.7
Regrading and Resurfacing	Old Oregon Trail	Baker-Durkee	21.0
Regrading and Resurfacing	Old Oregon Trail	Snake River Slides	8.0
Regrading and Resurfacing	Roosevelt Coast	Neskowin-Otis	11.0
Regrading and Resurfacing	Roosevelt Coast	Port Orford-Denmark	10.8
Resurfacing	Mt. Hood	Rhododendron-Government Camp	10.4
Resurfacing	Roosevelt Coast	Riverton-Bandon	12.0
Regrading	Old Oregon Trail	La Grande-Hot Lake	8.0
Concrete Bridge	Roosevelt Coast	Wahanna Creek (210 feet.)	
Concrete Bridge	Roosevelt Coast	Necanicum River (172 feet)	
Concrete Bridge	Roosevelt Coast	Siltcoos River (172 feet)	
Concrete Bridge	Pacific	Camas Swale (120 feet)	
Concrete Bridge	Pacific	Myrtle Creek (120 feet)	
Concrete Bridge	Pacific	Rogue River (550 feet)	
Concrete Bridge	Old Oregon Trail	Grande Ronde River (300 feet)	
Concrete Bridge	Green Springs	Klamath River (370 feet)	
Concrete Bridge	McKenzie	Canal at Walterville (150 feet)	
Concrete Bridge	McKenzie	McKenzie Bridge (230 feet)	
Concrete Bridge	McKenzie	Gate Creek (180 feet)	
Steel Bridge	McKenzie	Springfield (1090 feet)	

For a complete record of the projects on which work was in progress during the biennium, reference should be made to the detailed tables included in Part Four of this report.

WORK UNDER CONTRACT

During the 22-month period from December 1, 1928, to September 30, 1930, the State Highway Commission entered into 176 contracts for highway and bridge construction. In amount, these contracts totaled $9,642,600, the average amount per contract being in excess of $54,000. The mileages of different types of work involved, were as follows:

New Construction—		*Betterment and Maintenance—*	
Paving	10.7 miles	Repaving	14.2 miles
Bituminous Macadam	122.4 miles	Non-skid Treatment	78.3 miles
Rock Surfacing	148.0 miles	Oiling	110.8 miles
Grading	230.0 miles	Resurfacing	243.0 miles
Bridges	50.0 miles	Regrading	168.9 miles
		Crushed Rock in Stock Piles	555,320 cu. yards

It is the policy of the Highway Commission to let by contract all work that can be handled satisfactorily on a contract basis. Practically all new construction and betterment work and all resurfacing and rock crushing work is handled in that manner.

REVENUES AND EXPENDITURES

The expenditures made by the State Highway Commission during the 22-month period from December 1, 1928, to September 30, 1930, have amounted to the sum of $22,458,936.51, of which sum the State has contributed $20,173,762.21; the Federal Government has contributed $1,551,866.54; the various counties of the State have contributed $717,959.13; and railroad companies and other cooperators have contributed $15,348.63.

The revenues from which the $20,173,762.21 contributed by the State were derived are as follows:

Source	Dec. 1, 1928 to Dec. 31, 1929	Jan. 1, 1930, to Sept. 30, 1930	Total
Motor vehicle license fees	$ 5,442,144.27	$ 5,655,325.34	$11,077,469.61
Gasoline and distillate tax	5,036,055.17	4,509,905.32	9,545,960.49
Motor transportation fees	126,109.06	345,955.94	472,065.00
Interest on bank balances, etc.	49,021.98	26,090.85	75,112.83
Fines for traffic law violations	25,143.10	15,346.05	40,489.15
Funds on hand at beginning of biennium	769,268.37		769,268.37
Totals	$11,427,741.95	$10,552,623.50	$21,980,365.45

It should be noted that the $22,458,936.51 mentioned above as the amount expended by the Highway Commission during the 22-month period, includes $6,671,893.17 expended in the payment of interest and maturities on bonds, the whole of which was, of course, paid from the $20,173,762.21 of funds contributed by the State. Therefore, the amount of State funds contributed toward actual construction and maintenance operations during the two-year period was $13,501,869.04.

The $1,551,866.54 contributed by the Federal Government is the amount of federal aid paid over to the State during the biennium, in accordance with the terms of the Federal Aid Act. It does not include any of the moneys expended by the Federal Government in the construction and maintenance of forest roads. The amount of federal aid to be contributed by the Federal Government during the coming biennium will be much greater than during the biennium now closing, due to the increased amounts of federal aid that have recently been authorized by Congress and to the larger construction program which the State will have under way.

The $717,959.13 contributed by the various counties of the State is the amount of county cooperation paid in during the biennium in accordance with cooperative arrangements agreed upon between the Highway Commission and the officials of the respective counties. The amount of county cooperation received this biennium is considerably less than for the previous biennium due to the fact that counties cooperate only in the first construction of the highways, and as the first construction in many of the counties is now entirely completed, and as the proportion of first construction with respect to betterment and maintenance work is rapidly decreasing, there is, each year, less work in connection with which county cooperation can be expected.

The $15,348.63 contributed by railroad companies and other cooperators is the amount contributed by these cooperators toward the cost of grade crossing eliminations and other work from which they derive benefit.

For a comparison of the expenditures and revenues of 1929 and 1930 with the expenditures and revenues of previous years, reference should be made to the tables in Part Four of this report. The relative proportions of expenditures under the several main heads of expenditure classifications, and the relative proportions of the various income items, are very clearly indicated in the charts which appear on pages 24 and 25.

FUNDS AVAILABLE FOR EXPENDITURE DURING 1931 AND 1932

It is estimated that at the beginning of the year 1931, there will be in the State Highway Fund (exclusive of market road money) a balance of $2,000,000. It is estimated, also, that during the years 1931 and 1932, there will accrue to this fund, $8,700,000 from the motor vehicle license fee revenues, $13,300,000 from the gasoline tax, $600,000 from motor transportation fees and $100,000 from various other sources. Adding all of these amounts together gives a total of $24,700,000 as the amount of state money that will be available for expenditure by the State Highway Commission during the 1931-1932 biennium.

Of this $24,700,000 of state money, $3,500,000 will be required to complete contracts in effect at the beginning of the year 1931, and $6,636,997.24 will be required to pay the interest and principal on outstanding bonds. Approximately $1,500,000 will be required to cooperate with the Federal Government in forest highway work. Approximately $7,000,000 will be required for maintenance work and for such minor additions and betterments as are made necessary by the normal increase in traffic. Approximately $500,000 will be required for rights of way, parks, rock quarries, gravel pits and additional equipment. Approximately $1,000,000 must be reserved for such items as administration, general supervision, traffic law enforcement, surveys, revolving fund, et cetera. No less than $500,000 must be held for contingencies, overruns of estimates and unforeseen expense of other kinds. Subtracting these amounts from the probable amount of available state money, as above stated, leaves approximately $4,000,000 of state money available for additional construction and betterment projects.

In addition to this $4,000,000 of state money, it is anticipated that the State will be able to collect approximately $3,500,000 of federal aid and approximately $500,000 of county cooperation, both of which amounts will likewise be available for new construction and betterment projects. The total of all of these amounts is $8,000,000, which amount, then, is the approximate gross total amount that the State will have at its command during the biennium for additional construction and betterment contracts.

FEDERAL AID

Federal aid continues to be a very important factor in the State's highway improvement program, the funds derived from that source during the period covered by this report representing approximately 25 per cent of the total amount expended for new construction and betterment work.

The congressional authorizations of federal aid, which for the past six years have been made at a rate of $75,000,000, were, in 1930, increased to $125,000,000 for each of the three years 1930, 1931 and 1932. As a result of this increase in the total amounts authorized, Oregon's annual apportionment of federal aid funds is increased from approximately $1,200,000 per year to approximately $2,000,000 per year.

The State is experiencing some difficulty in taking up its federal aid due to the fact that much of the highway work to be done in the State is ineligible for federal aid by reason either of its not being on the federal aid highway system, or of its being on a section of highway for which the maximum amount of federal aid has already been obtained. The experience of the last few years indicates that the annual collections of federal aid cannot exceed about 30 or 35 per cent of the total amount expended for new construction and betterment work. Therefore, in order to take up $2,000,000 of federal aid per year, the State must carry on a construction and betterment program of between $6,000,000 and $7,000,000 per year. Present revenues are not sufficient to finance a program of that size in addition to carrying the cost of highway maintenance and meeting the interest and principal payments on outstanding bonds. Therefore, if all of the State's share of federal aid is to be taken up, the sale of a limited amount of bonds will be necessary. It is not anticipated that this situation will continue very long, however, as it is believed that Congress will shortly remove the per mile limitation and authorize an extension of the federal aid highway system, which actions will greatly increase the proportion of eligible projects, thereby enabling the collection of the State's share of federal aid with a materially smaller expenditure of State funds.

Since the beginning of federal aid in highway improvement work, a total of $18,442,283 has been apportioned to the State of Oregon. Of this amount, $13,212,902.70 has actually been paid over to the State, and $2,915,628.61 is collectable by the State on approved projects now under contract.

Federal aid is limited to those highways which are included in the approved federal aid highway system, which system, in Oregon, comprises 3,246 miles, 3,167 miles of which are on the state highway system and 79 miles of which are on highways which are not included in the state system. The names, lengths and locations of the highways to which federal aid is limited are shown in the accompanying mileage table and map.

MILEAGES OF FEDERAL AID HIGHWAYS

The mileages given in this table are the mileages of highways eligible for federal aid as approved by the United States Bureau of Public Roads:

Federal Route Number	Highway	Total Mileage	Miles Outside of Federal Reserves	Miles Within Federal Reserves		
				National Forests	Indian Reservations	Other Reserves
1	Astoria to Pendleton	499.78	446.75	27.76	22.90	*2.37
2	Roosevelt Coast Highway	396.77	344.34	51.46		†0.97
3	Pacific Highway	326.09	318.56	7.53		
4	The Dalles-California Highway	283.00	219.38	20.12	43.50	
5	Eugene to Ontario	391.10	312.50	78.60		
6	Arlington to Rock Creek	124.53	124.53			
7	La Grande to Enterprise	66.38	66.38			
8	Heppner Junction to Pendleton	107.00	107.00			
9	West Side Pacific Highway	106.98	106.98			
10	Albany-Corvallis Highway	10.12	10.12			
11	McMinnville-Tillamook Highway	48.68	34.14	14.54		
12	Sherman Highway	69.03	69.03			
13	Fort Klamath to Crater Lake	10.20	5.76	3.44	1.00	
14	Coos Bay-Roseburg Highway	62.02	62.02			
15	Green Springs Highway	56.15	54.65	1.50		
16	Fremont Highway	160.69	143.69	17.00		
17	Redwood Highway	42.90	42.31	0.59		
18	Umatilla-Wallula Highway	19.68	19.80			
19	Pendleton to Washington State Line	36.61	36.61			
20	Umpqua Highway	50.10	39.00	11.10		
21	Bend to Burns	131.80	131.80			
22	Corvallis-Newport Highway	56.65	56.65			
23	Salmon River Highway	21.92	22.20			
24	Portland to Maupin	94.05	55.93	38.12		
25	Siuslaw Highway	67.03	49.43	17.60		
26	Oregon City to Portland (east side)	7.00	7.00			
	Totals	3,246.26	2,886.56	289.36	67.40	3.34

*Celilo Canal Reserve.
† Heceta Head and Cape Perpetua Light House Reserves.

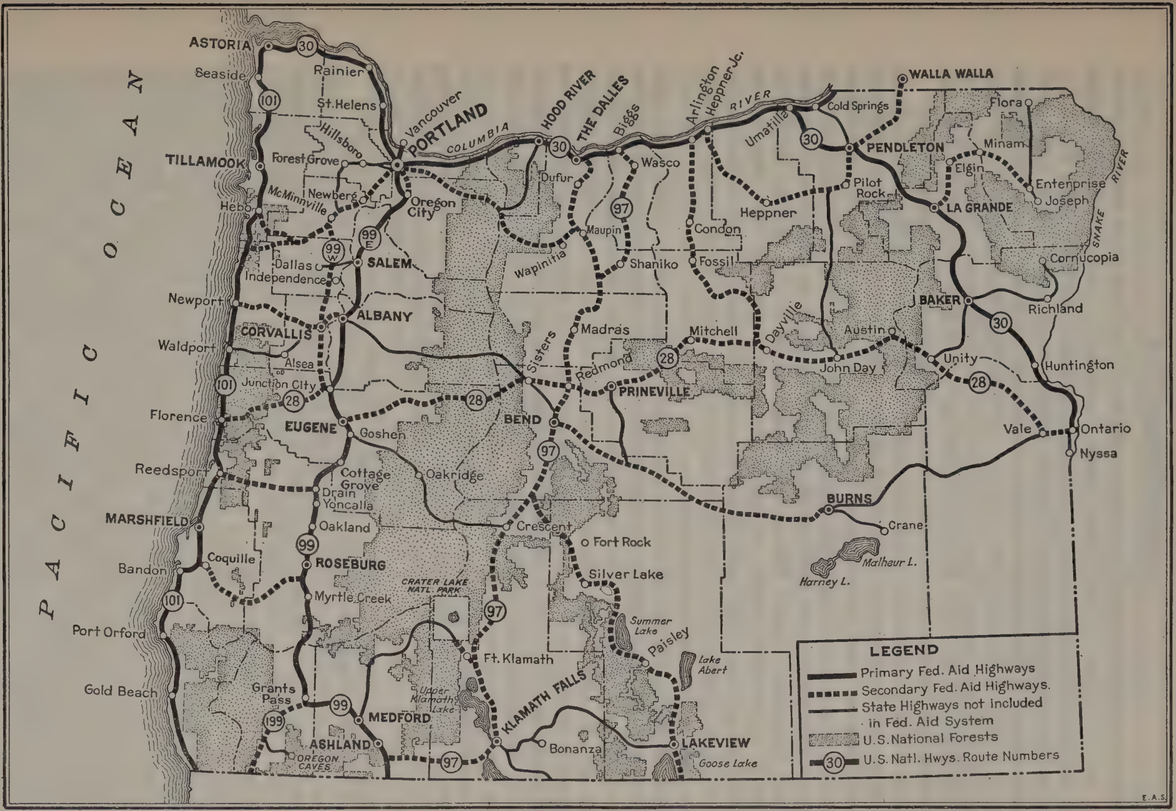
All federal aid work is handled under the direct supervision of the State Highway Commission. It must be performed, however, in accordance with requirements laid down by the Federal Bureau of Public Roads, and all plans must be accepted and approved by that Bureau. The Bureau is represented locally by a district engineer whose offices are located in Portland.

FEDERAL AID FUNDS AND FEDERAL FOREST ROAD FUNDS APPORTIONED TO OREGON

The following table shows the funds that have been apportioned to Oregon under the various Federal Aid Acts:

Period for Which Funds Are Apportioned	Federal Aid Funds	Forest Road Funds	Total
Act of July 11, 1916:			
July 11, 1916, to June 30, 1917	$ 78,687.37	$ 127,794.00	$ 206,481.37
July 1, 1917, to June 30, 1918	157,374.74	128,111.00	285,485.74
July 1, 1918, to June 30, 1919	236,332.74	132,796.00	369,128.74
July 1, 1919, to June 30, 1920	314,983.64	131,966.00	446,949.64
July 1, 1920, to June 30, 1921	394,038.01	130,071.00	524,109.01
July 1, 1921, to June 30, 1922		128,661.00	128,661.00
July 1, 1922, to June 30, 1923		122,967.00	122,967.00
July 1, 1923, to June 30, 1924		136,587.00	136,587.00
July 1, 1924, to June 30, 1925		136,686.00	136,686.00
July 1, 1925, to June 30, 1926		136,810.00	136,810.00
Act of February 28, 1919:			
Feb. 28, 1919 to June 30, 1919	787,459.10	218,871.00	1,006,330.10
July 1, 1919, to June 30, 1920	1,181,188.64	218,871.00	1,400,059.64
July 1, 1920, to June 30, 1921	1,182,114.02	158,939.00	1,341,053.02
Act of November 9, 1921:			
Nov. 9, 1921, to June 30, 1922	1,182,663.90	310,749.00	1,493,412.90
July 1, 1922, to June 30, 1923		846,360.00	846,360.00
Act of June 19, 1922:			
July 1, 1922, to June 30, 1923	788,442.60		788,442.60
July 1, 1923, to June 30, 1924	1,026,044.09	453,395.00	1,479,439.09
July 1, 1924, to June 30, 1925	1,176,830.15	453,093.00	1,629,923.15
Reapportionment of Funds:			
July 1, 1925, to June 30, 1926	10,575.00		10,575.00
Distribution of "Special Funds"		561,694.89	561,694.89
Act of February 12, 1925:			
July 1, 1925, to June 30, 1926	1,179,668.00	581,745.00	1,761,413.00
July 1, 1926, to June 30, 1927	1,182,945.00	581,138.00	1,764,083.00
Act of June 22, 1926:			
July 1, 1927, to June 30, 1928	1,182,202.00	580,348.00	1,762,550.00
July 1, 1928, to June 30, 1929	1,189,707.00	622,165.00	1,811,872.00
Act of May 26, 1928:			
July 1, 1929, to June 30, 1930	1,191,989.00	632,638.00	1,824,627.00
July 1, 1930, to June 30, 1931	1,197,667.00	631,987.00	1,829,654.00
Act of April 4, 1930:			
July 1, 1930, to June 30, 1931	798,445.00	702,208.00	1,500,653.00
July 1, 1931, to June 30, 1932	1,997,569.00	*1,300,000.00	*3,297,569.00
July 1, 1932, to June 30, 1933	*2,000,000.00	*1,300,000.00	*3,300,000.00
Reapportionment of Funds:			
July 1, 1930, to June 30, 1931	5,357.00		5,357.00
Total funds authorized	$20,442,283.00	$11,466,650.89	$31,908,933.89
Total funds alloted	$18,442,283.00	$ 8,866,650.89	$27,308,933.89
Expended for construction on state highways	$13,212,902.70	$ 5,364,102.76	$18,577,005.46
Obligated for construction on state highways	2,915,628.61	692,486.72	3,608,115.33
Expended and obligated for maintenance and for construction not on state highways		2,217,050.21	2,217,050.21
Total expended and obligated	$16,128,531.31	$ 8,273,639.69	$24,402,171.00
Unobligated balance (Sept. 30, 1930)	$ 2,313,751.69	$ 593,011.20	$ 2,906,762.89

* Approximate amounts. Definite apportionments not yet made.



MAP SHOWING FEDERAL AID HIGHWAYS AND UNITED STATES NATIONAL HIGHWAY ROUTES

Federal aid can be obtained only in connection with work upon those highways which are shown on this map in heavy solid lines or in heavy dotted lines. Those highways which are shown in the lighter solid lines are not eligible for federal aid. Those highways in the map which bear numbers enclosed in circles are on United States Highway Routes, the numbers shown being the numbers of the respective routes. The United States National Highway Routes and the Federal Aid Highways have no definite relation one to the other although they coincide in many places.

FOREST HIGHWAYS

The federal appropriations for forest road construction and improvement, which prior to 1930, have been made at a rate of $7,500,000 per year, were in 1930 increased to $12,500,000, the increased rate of appropriation extending over the federal fiscal years 1931, 1932 and 1933. This change has increased Oregon's share of the forest road funds from approximately $1,075,000 per year to approximately $1,750,000 per year, of which amount approximately $1,300,000 is designated for expenditure on highways classed as "forest highways," and approximately $450,000 is designated for expenditure on forest development roads and trails.

The annual forest highway program is agreed upon by a joint conference of representatives of the Bureau of Public Roads and the Forest Service with the State Highway Commission, and is submitted to the Secretary of Agriculture for approval. The allotment of the roads and trails part of the appropriations is made by the Forest Service without reference to the Bureau of Public Roads or the State. All forest highway engineering and construction is handled by the Bureau of Public Roads. Also, all contracts are made by the Government. County and state cooperative funds are paid to the Government as required during the progress of the work.

The forest highway funds allotted to Oregon since 1916 total $8,866,650.89. Of this amount, $5,364,102.76 has been expended on the state highway system, to which has been added $4,244,585.83 of state funds and $1,419,470.90 of county funds, bringing the amount expended for forest highway work on the state highway system to a total of $11,028,159.49. This total expenditure has resulted in the completion of 546.8 miles of grading, 474.2 miles of rock surfacing, 27.2 miles of grade widening and regrading and 686.3 miles of surveys.

Forest highway funds are expended on county roads as well as state highways. Examples of this may be found on the Reedsport-Scottsburg and Tiller Trail projects in Douglas County, the Heppner-Spray project in Morrow and Wheeler Counties, the Canyon City-Burns project in Grant and Harney Counties and the Salmon River Road in Lincoln County. This assistance has been of great help to the counties.

All forest highways are maintained for two years after completion by the Government, after which the State, in the case of state highways, and the county, in the case of county highways, must assume the obligation of maintenance.

The more important forest highway projects of the biennium on the state highway system are the Wapinitia project in Wasco County, the Fremont Forest Section of the Fremont Highway in Klamath County, the Yaquina Bay-Alsea Bay Section of the Roosevelt Coast Highway in Lincoln County, the Suttle Lake-Deschutes County Line Section of the Santiam Highway in Jefferson County, the Ukiah-Dale Section of the Pendleton-John Day Highway in Umatilla County, the Goodman Creek Section of the Willamette Highway in Lane County and the Rainrock-Florence Section of the Siuslaw Highway in Lane County. The expenditures in connection with forest road work during the period from December 1, 1928, to September 30, 1930, amounted to $1,571,424.27, of which $832,437.29 was federal forest highway money, $606,986.98 was state money and $132,000 was county money. The work accomplished during the same period consisted of 43.8 miles of grading, 31.9 miles of rock surfacing, 5.5 miles of grade widening and regrading and 37.5 miles of surveys.

For a complete list of the forest road projects placed under contract, with estimated costs, cooperative shares, amounts expended and other detailed information, see the compilation of forest road projects included in Part Three of this report.

COUNTY COOPERATION IN WORK ON STATE HIGHWAYS

Under cooperative agreements in effect on December 1, 1928, and under cooperative agreements entered into between that time and September 30, 1930, a total of $1,090,718.41 county money has been obligated for expenditure in cooperation with the State on construction work on state highways. Of this amount, $717,959.13 was disbursed during the 22-month period, and of that, $314,785.58 was paid out by counties on county vouchers drawn by the State Highway Department, and $403,173.55 was paid into the State Highway Fund by counties for direct disbursement by the State. Subtracting the amount of the disbursements from the amount of the obligations, leaves $372,759.28 as the outstanding county obligation in connection witn state highway work, as of September 30, 1930. The details of the amounts obligated and the amounts expended by each county, showing the particular pieces of work involved, will be found in Part Three of this report.

In addition to the amounts mentioned above, counties have obligated themselves to the extent of $435,000 in connection with forest road work on state highways, which work is handled under the supervision of the United States Bureau of Public Roads and the United States Forest Service. County expenditures during the period from December 1, 1928, to September 30, 1930, on this forest road work on state highways, have amounted to $132,000, leaving an obligated balance payable by counties of $303,000.

The State receives financial cooperation from counties only in connection with original construction work. Once a highway or a section of highway has been constructed, the county is relieved of all financial responsibility in connection with it, and the burden of maintenance and further improvement is assumed by the State. It follows, of course, that as the highways are completed and as the work to be done on the highway system changes over from new construction work to maintenance and betterment work, the amount of county cooperation will decrease. It is apparent, also, that this decrease will accelerate with time due to the reason that as the highways are completed, an increasing percentage of the new construction operations are in the thinly populated areas where the counties are financially unable to cooperate to any great extent. That these conditions are operating to decrease the amount of county cooperation is quite evident from the following comparison of the amounts of cooperation received during the last four bienniums:

1923-1924	$ 3,785,883.89
1925-1926	2,042,944.63
1927-1928	1,302,305.17
1929-1930	717,959.13

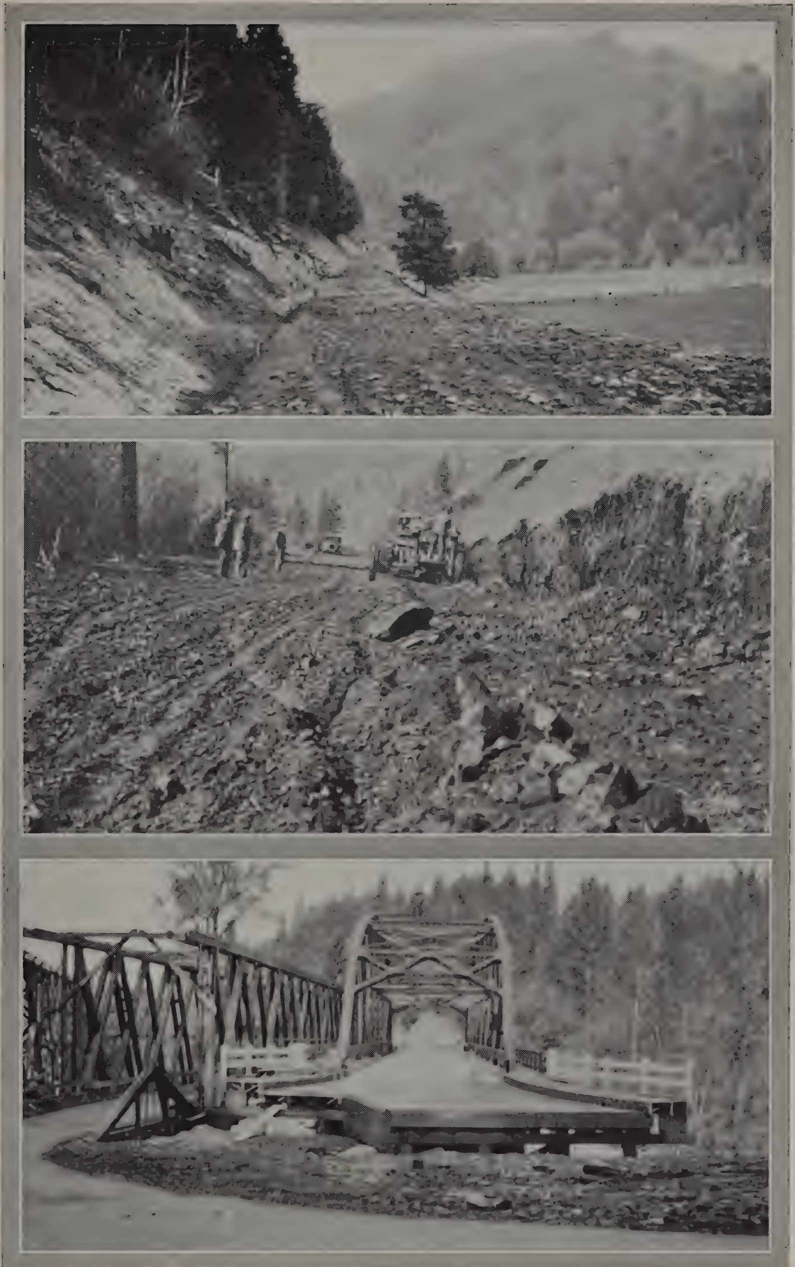
MARKET ROADS

The legislature of 1919 passed, and the people by a referendum vote approved, the State Market Road Act which created the State Market Road Appropriation, to provide State Aid for the construction of a system of main county roads from the producing centers to the market centers, these roads to be designated as market roads. The appropriation is raised by a one-mill state levy on all the taxable property in the State, to be apportioned to the counties in ratios of assessed valuations, provided that no county may receive in excess of 10 per cent of the total amount raised in any one year. County market road levies are made to raise funds to match the State Market Road Appropriation funds. The State Highway Commission administers the act, the cost of administration being deducted from the Market Road Appropriation before the appropriation is apportioned to the counties. The turnover of funds is made twice a year, shortly after each half of the state taxes are collected. During the eleven years that the Market Road Act has been in operation, the State Highway Commission has administered the State Market Road Appropriation as follows:

Raised by state one-mill levy		$11,729,821.54
Apportioned and paid to counties	$11,601,102.89	
General administration and supervision	114,858.37	
Cash on hand October 1, 1930	13,860.28	
Total	$11,729,821.54	$11,729,821.54

Due to that part of the act which provides that no county may receive in excess of 10 per cent of the total amount raised in any one year, there has each year been raised by the state one-mill levy in Multnomah County, an amount in excess of the amount apportioned and turned over to Multnomah County from the State Market Road Appropriation. During the eleven-year period, there has been collected by the state one-mill levy in Multnomah County $4,149,004.16, while the total apportioned and paid to Multnomah County from the State Market Road Appropriation was $1,168,676.79. The difference of $2,980,327.37 constitutes the so-called Multnomah County surplus which has been apportioned and turned over to the other counties as a part of the appropriation. Each other county has benefited from this surplus by having each year been apportioned an amount in excess of the amount collected by the state one-mill levy in that county, the amount of the excess in each case having been in proportion to the equalized assessed valuation.

As an accommodation to the counties, the Highway Commission has, whenever requested by the county officials, furnished from its stocks, at cost, such supplies and equipment as the counties could not readily obtain elsewhere. Likewise, the Highway Commission has furnished, at cost, such engineering services as the counties have desired to have furnished. The cost of these supplies and services are looked upon as advances of funds that are later to become due the counties under their respective apportionments from the State Market Road Appropriation, and deductions to cover the costs are made from the county apportionments at the time the balance of the apportionments are turned over to the counties in cash. During the last biennium, the Highway Commission has each month prepared statements showing the amounts of such charges accruing during the month and has forwarded the state-



VIEWS SHOWING TYPES OF WORK AND METHODS OF CONSTRUCTION BEING USED ON COUNTY MARKET ROAD WORK: UPPER—ALLEGANY ROAD IN COOS COUNTY; CENTER—HILGARD-STARKEY ROAD IN UNION COUNTY; LOWER—CLACKAMAS RIVER BRIDGE NEAR CARVER IN CLACKAMAS COUNTY

ments to the counties. This was done at the request of several counties so they could check the correctness of the charges, keep more closely informed of engineering costs and simplify county bookkeeping. Most of the counties have paid the charges by warrant monthly, but some have requested that the advances continue to be deducted from their apportionments. The following statement does not show the full extent to which the counties have taken advantage of this service, as many supplies have been furnished and much engineering work has been performed for which the counties have reimbursed the Commission in cash:

Total of advances made to counties and deducted	$ 219,192.61
Paid to counties in cash	11,381,910.28
Total amount apportioned to counties 1920-1930	$11,601,102.89

The original act provided that plans for market road work be prepared and submitted to the State Highway Commission for approval and that, upon approval, the funds be turned over to the counties. The division of authority was not definite, and it was found that, after plans had been approved and the funds turned over, the authority of the Commission ended, so that supervision which would assure many economies was impossible. In 1925, the legislature, by amending the Market Road Act, outlined more definitely the division of authority, created the office of county engineer, provided for county market road systems, for cost keeping, for maintenance, and for the expenditure of market road funds upon some state highways, and increased, in a measure, the responsibility of the State Highway Commission.

Under the revised act, the county court designates the county market road system and appoints the county engineer. The county engineer makes the surveys and prepares the plans and specifications for the projects which the county court elects to undertake. The plans are submitted to the State Highway Commission, and upon approval, contracts are let or the work is done by county forces.

The county engineer supervises construction and is charged with keeping accurate cost records for all projects, and for this purpose all market road bills are required to go through his hands. He must also certify that the work for which payment is being made has been done in accordance with the approved plans and specifications, and is placed under bond to protect the county against any loss.

The Highway Commission administers the act, apportions and turns over the funds to the counties, supervises construction and maintenance, and inspects surveys, plans, specifications and contracts. Due to the great amount of work being done, the large number of surveys, projects, contracts, etc., the supervision which the Commission is able to give is limited, and much of the responsibility for the detail work is left to the county engineers. The cost of State Highway supervision during the last biennium has been slightly less than one-half of 1 per cent of the total funds expended.

Considerable amounts of county funds other than those raised by the market road levies are used to cooperate on market road construction and maintenance. These funds are required by law to be expended as market road funds and subject to the same requirements, no matter from what source they come. The largest contributor to this class of funds was county road bond issues. Other sources are road district special levies, county general road funds, county motor vehicle funds, O. & C. funds, forest service funds, railroad cooperation, donations, etc. Not all of the cooperative funds, expended on market road construction during the first five-year period were reported. Under the revised act, however, more complete reports are available, which indicates cooperative expenditures as follows:

1925	$ 858,679.15
1926	1,517,346.55
1927	1,302,582.57
1928	1,161,632.98
1929	871,218.45
1930	626,872.76

Since the designation of the original systems and the approval of the county market road designation maps, several counties have found it desirable to make additions and extensions to their market road system, and in a few cases, counties have reduced the mileages in their systems. The county court in each such case designated the addition, the extension or the elimination to be made, and, upon the approval of the State Highway Commission, the change became effective. The total mileage of roads in the combined market road system (Multnomah County roads and state highways excluded) and the state of improvement, as of October 1, 1930, is as follows:

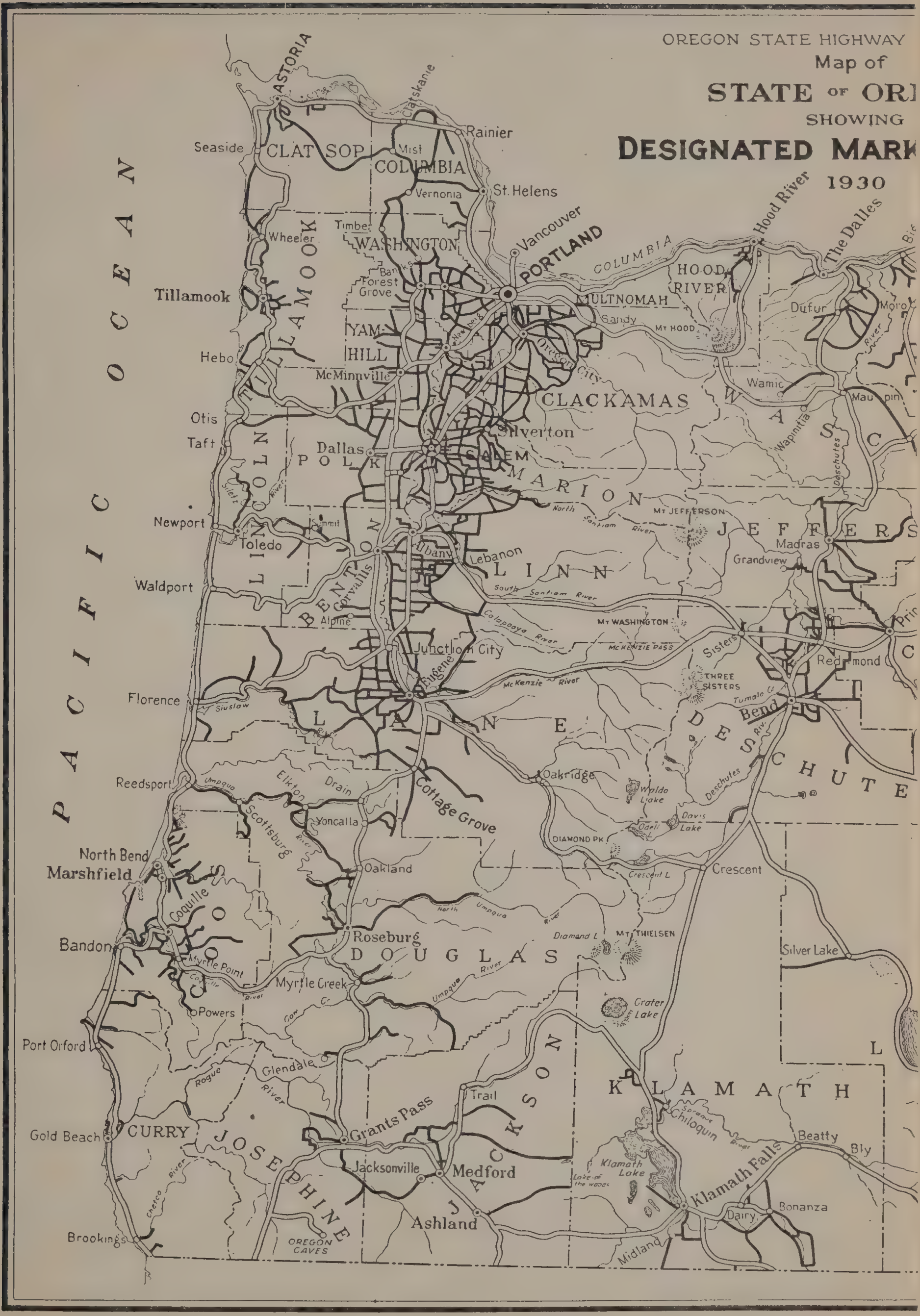
Miles of bituminous paved roads	266.27
Miles of concrete paved roads	125.14
Miles of heavy oil surfaced roads	177.43
Miles of light oil surfaced roads	76.97
Miles of rock or gravel surfaced roads	3,051.97
Miles of improved earth roads	505.10
Miles of unimproved roads	1,823.64
Total mileage of market roads	6,026.52

Since the beginning in 1920, there has been made available for market road construction and improvement $30,544,734.59. Of this sum, $11,601,102.89 was apportioned to the counties from the State Market Road Appropriation; $11,824,216.48 was raised by county market road levies and $7,119,415.22 was funds from other sources, expended in cooperation with market road funds on market roads.

During the same period, a total of $30,386,213.09 has been expended, and included in that amount are expenditures as follows:

$1,183,323.12	as cooperation on state highway projects
638,638.55	for major bridges
320,403.68	as cooperation on forest and other road projects
1,484,601.29	for market road maintenance

The balance was expended on market road construction projects, the following work having been accomplished: grading, 3,489.86 miles; rock or gravel surfacing, 2,764.04 miles; oiling, 269.10 miles; paving, 298.36 miles.


OREGON STATE HIGHWAY
Map of
STATE OF ORI
SHOWING
DESIGNATED MARK
1930

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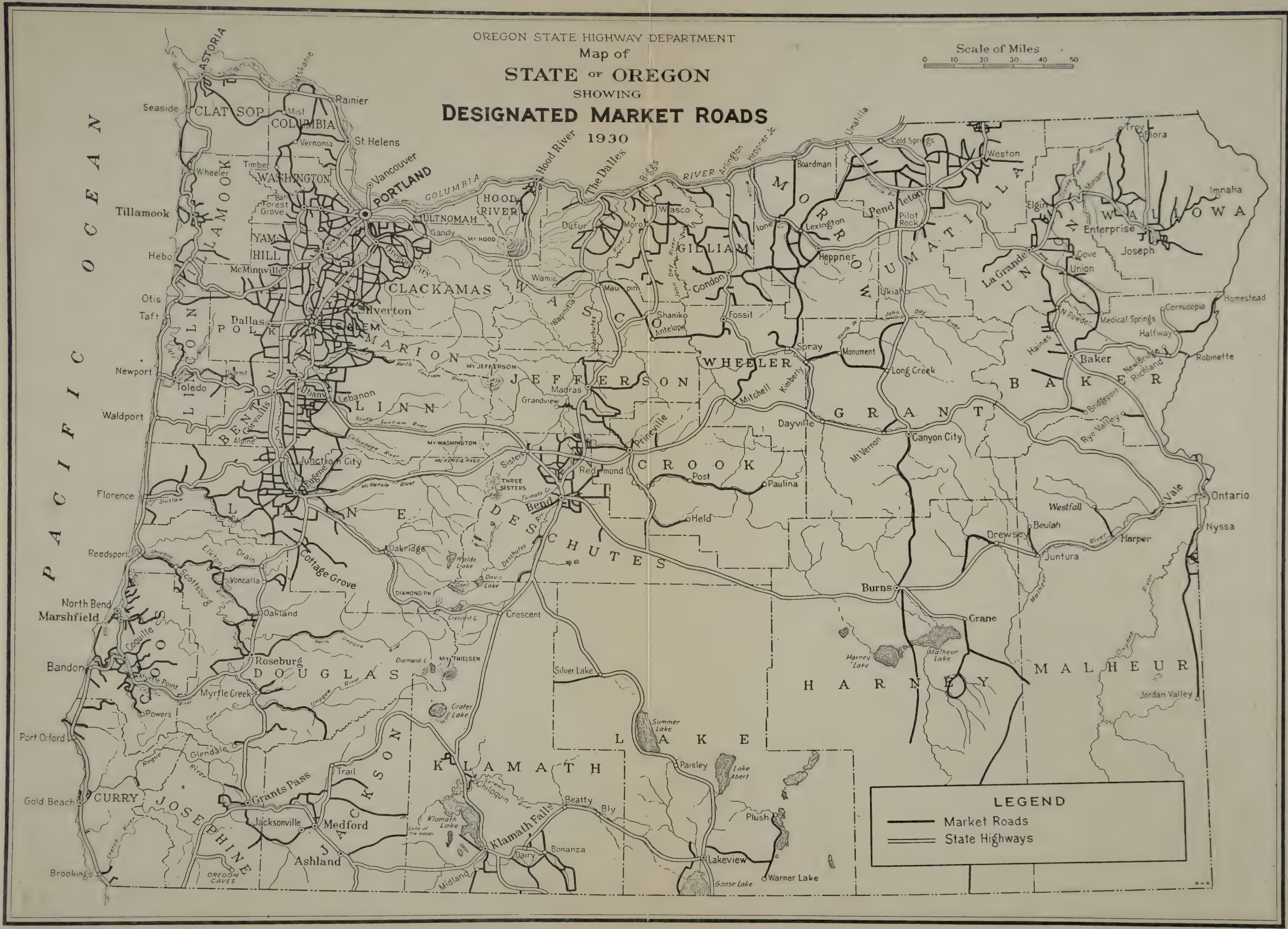


OREGON STATE HIGHWAY DEPARTMENT

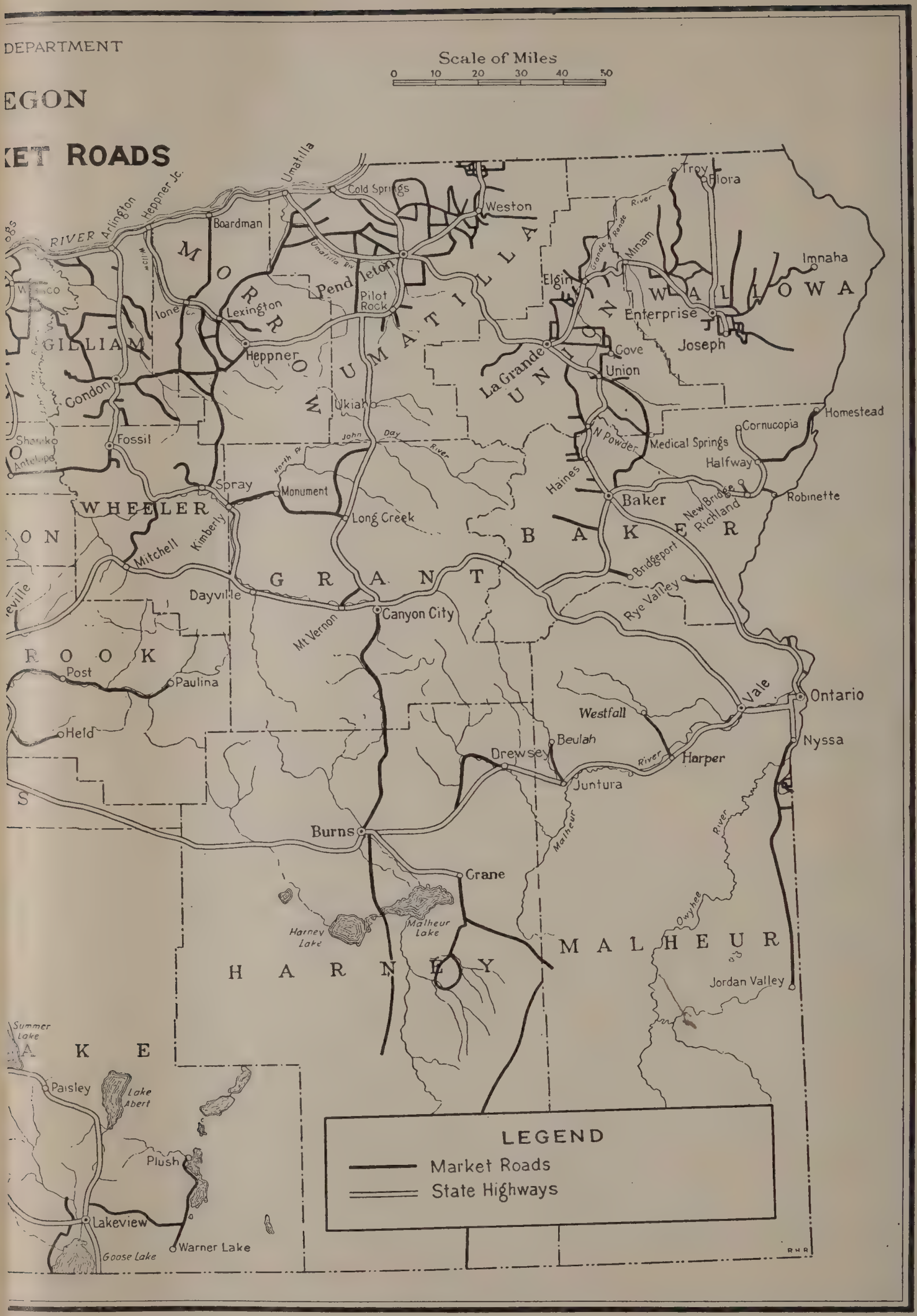
Map of

STATE OF OREGON

SHOWING

DESIGNATED MARKET ROADS

1930


DEPARTMENT
EGON
KET ROADS
Scale of Miles
0
10
20
30
40
50
LEGEND
Market Roads
State Highways
RIVER
Umatilla
Heppner Jc.
Arlington
Cold Springs
Weston
Boardman
MORROW
UMATILLA
Pendleton
Pilot Rock
Ione
Lexington
Heppner
Condon
GILLIAM
Fossil
Shaniko
Antelope
WHEELER
Spray
Monument
Long Creek
Ukiah
John Day River
North Fk
Kimberly
Mitchell
Dayville
GRANT
Mt Vernon
Canyon City
CROOK
Post
Paulina
Held
Troy
Flora
Grande Ronde River
Minam
Elgin
WALLOWA
Imnaha
Enterprise
Joseph
Cove
Union
La Grande
UNION
Homestead
Cornucopia
Halfway
N Powder
Medical Springs
Haines
Baker
New Bridge
Richland
Robinette
BAKER
Bridgeport
Rye Valley
Vale
Ontario
Nyssa
Westfall
Beulah
Drewsey
Juntura
Harper
River
Malheur
Burns
Crane
Harney Lake
Malheur Lake
HARNEY
MALHEUR
Owyhee River
Jordan Valley
Summer Lake
LAKE
Paisley
Lake Abert
Plush
Lakeview
Goose Lake
Warner Lake
RMR

The above figures for funds available, funds expended and work accomplished are for the eleven-year period, and indicate the extent and importance of the market road improvements. One, two or three years' work did not make much showing, but the eleven-year period shows the culminative effect of continued effort.

During the last two years, a total of $5,579,764.83 was expended as follows:

$ 92,128.18	as cooperation on state highway projects
159,403.55	for construction of major bridges
1,973.68	as cooperation on forest road projects.
678,313.61	expended by Multnomah County and no mileage counted
4,647,945.81	for market road construction projects

The last mentioned of these expenditures resulted in improvement work as follows: Grading, 705.50 miles; rock or gravel surface, 653.08 miles; oiling, 224.03 miles and paving, 21.44 miles. Arbitrarily dividing the cost by the number of miles improved, gives rough average costs per mile of $4,100 for grading, $2,000 for rock or gravel surfacing, $1,100 for oil surfacing, and $10,000 for paving. These figures are arbitrarily taken as averages for all miles of work accomplished during the two-year period in all counties (Multnomah County excepted), as an indication, only, of the average costs of the market road improvements. The costs are very low considering the amount of heavy grading work that has been done, and the fact that considerable right of way cost is included in the grading cost.

The extent of improved mileage after eleven consecutive years of work is making possible the establishment of maintenance organizations, with patrol units and proper equipment, which provide efficient and economical maintenance and which assure the taxpaying public not only that the improved mileage will be actually available for all-weather and all-year travel, but also that the investment in the roads themselves will not be lost by allowing grade and surface to deteriorate. The need and value of maintenance are becoming more generally realized, and all but a few of the counties have established maintenance organizations with the patrol gang system and good equipment. Those counties which have a considerable mileage to maintain find this an economical plan; many counties maintain county and market roads with the same equipment, thus accomplishing both more economically, as the equipment can be worked to capacity. The smaller counties have a more difficult problem, as the mileage to maintain is smaller and generally the sections are more widely separated, so that even when combined, the maintenance of county and market roads does not provide sufficient mileage to occupy a gang of patrol full time. Consequently these counties must resort to part-time work and to cheaper equipment.

During the first five-year period, maintenance with market road funds was not authorized. Market roads were maintained as county roads. The amended act authorized market road maintenance, but few counties were able to organize for systematic maintenance in 1925. In 1926, however, 1,987 miles were maintained at an average cost of $88 per mile; in 1927, 2,368 miles at an average cost of $105 per mile; in 1928, 2,781 miles at an average cost of $89 per mile; in 1929, 3,189 miles at an average cost of $107 per mile; and to October 1, 1930, 3,488 miles at an average cost of $87 per mile. The 1930 cost is for an incomplete year and the complete year's cost will probably be about the same as for 1929.

Some of the counties have been handicapped to some extent in their market road operations by the fact that the improvement of their state highways, which are more vital to them than their secondary roads, has not been entirely completed. The improvement of feeder roads should follow, rather than precede, the improvement of the state highways. The provision of the Market Road Act, which permits these counties to concentrate their efforts upon their state routes, has proven most wise. Several counties have materially advanced the improvement of their state highways during the last biennium by the use of market road funds.

The end of the 1930 construction season completes six years of operation under the amended Market Road Act. There has been continued improvement in results and economy, the counties are becoming better organized, the improved mileage is being properly maintained, cost records are being kept and the economic value of various methods, equipment and operations is being closely investigated.

Particular attention has been paid to adoption of standards to meet traffic conditions, as some roads carry a very heavy traffic and others only a few cars per day.

The procurement of heavy equipment such as tractors and graders, compressors, and, in some cases, power shovels has been encouraged. The use of this equipment has greatly reduced construction costs both on market roads and county roads. In many cases, hard intermediate material containing large boulders, and even solid rock cuts which have been shot-up, are excavated by blading the material across the roadbed. The saving in this method of construction is very great where standards apply and conditions permit.

The market road improvement has been even and steady, almost the same income having been available each year. Having a yearly construction and maintenance fund assured has enabled each county to secure proper equipment for both maintenance and construction and to establish organizations for engineering, construction and maintenance. By offering full-time employment, efficient men are attracted and retained, each year's experience adding to their knowledge, ability and skill. A general stabilizing influence is exerted by the Market Road Act, which is noticeable in its effect upon the county highway finances, upon the county highway engineering, construction and maintenance organizations, upon the highway improvement programs, and upon the class of work performed. The system of roads is definitely designated. Most of the work is confined to the more important roads. Incoming officials recognize the importance of the market road system and go ahead improving the designated roads on about the same standards and, usually, with no changes in the personnel of the organizations.

FINANCIAL STATEMENT STATE MARKET ROAD APPROPRIATION—1922-1930

For statements prior to 1922, see earlier reports of the State Highway Commission

	1922	1923	1924	1925	1926
Amount carried over from previous year	$ 15,669.56	$ 6,920.50	$ 4,185.58	$ 4,035.26	$ 1,943.38
Amount raised by one-mill general state levy	1,020,804.20	1,009,499.16	1,042,410.62	1,058,880.74	1,084,537.62
Total amount available for distribution	1,036,473.76	1,016,419.66	1,046,596.20	1,062,916.00	1,086,481.00
Total amount apportioned and matched	1,024,557.94	1,006,266.38	1,036,208.78	1,050,974.89	1,061,892.75
Advances to counties in services and supplies	38,311.15	24,495.29	28,296.00	21,696.64	25,874.84
Paid to counties in cash	986,246.79	981,771.09	1,007,912.78	1,029,278.25	1,036,017.91
Expended for general administration	4,995.32	5,967.70	6,352.16	9,997.73	14,804.68
Amount carried over unapportioned and unmatched	6,920.50	4,185.58	4,035.26	1,943.38	9,783.57

	1927	1928	1929	1930	Total
Amount carried over from previous year	$ 9,783.57	$ 10,528.12	$ 8,886.96	$ 11,501.71	$ ....
Amount raised by one-mill general state levy	1,110,677.35	1,124,416.46	1,122,332.18	1,124,988.69	11,729,821.54
Total amount available for distribution	1,120,460.92	1,134,944.58	1,131,219.14	1,136,490.40	....
Total amount apportioned and matched	1,094,737.92	1,109,944.58	1,099,031.17	1,106,490.40	11,601,102.89
Advances to counties in services and supplies	7,867.23	11,674.70	4,956.06	1,161.32	219,192.61
Paid to counties in cash	1,086,870.69	1,098,269.88	1,094,075.11	1,105,329.08	11,381,910.28
Expended for general administration	15,194.88	16,113.04	20,686.26	*16,139.72	114,858.37
Amount carried over unapportioned and unmatched	10,528.12	8,886.96	11,501.71	*13,860.28	....

* Estimated.

ROOSEVELT COAST HIGHWAY

At this time the outstanding and most important objective of Oregon's road building program is the completion of the construction of the Roosevelt Coast Highway. This highway is of tremendous importance to all of Western Oregon, and although in its present partially completed state, it is rendering a great and valuable service, it can not, until its last link is completed, bring to the State the full return of development and prosperity, pleasure and profit which will inevitably follow its opening to through traffic. Realizing these facts, the State Highway commission has been bending every effort toward the completion of this highway. As a result, very considerable progress has been made during the biennium in bringing about the completed condition which is so urgently desired.

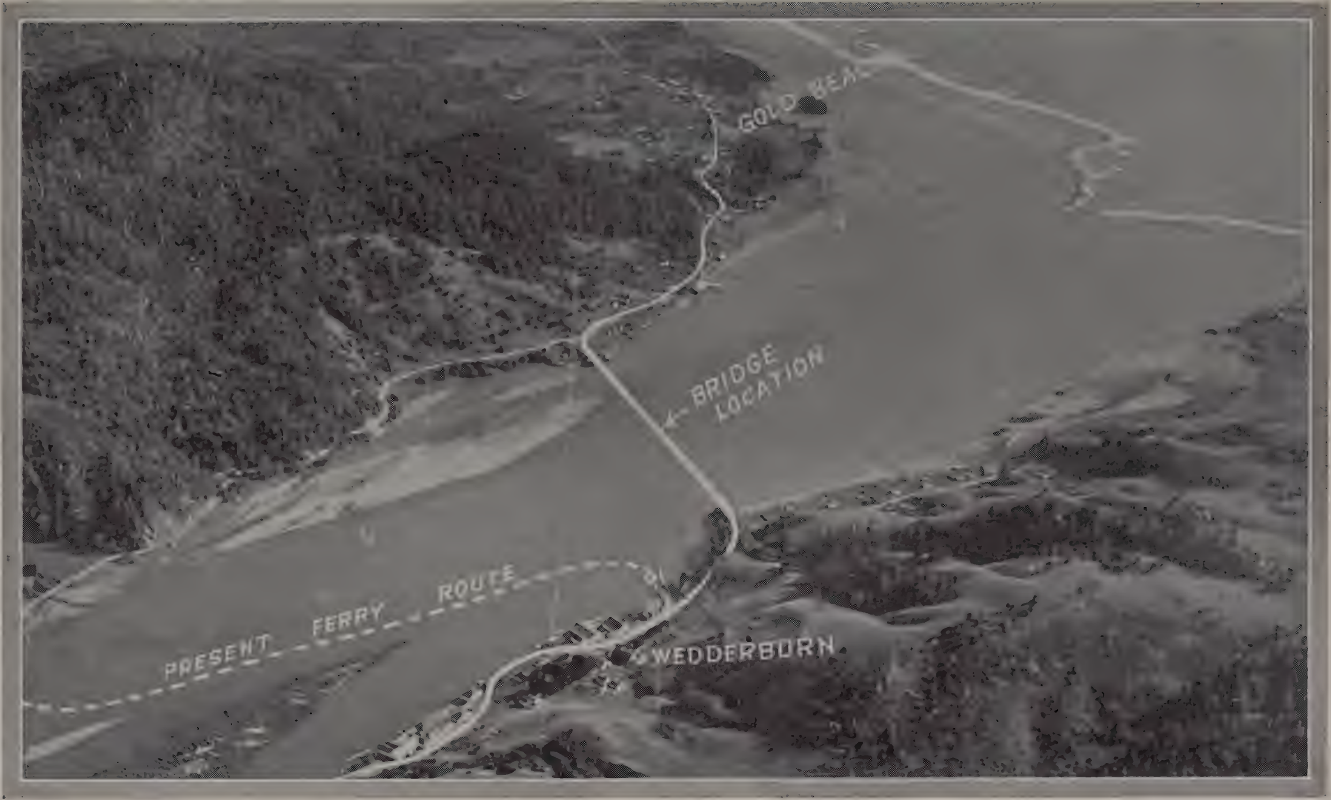
During the 22 months period from December 1, 1928, to September 30, 1930, $2,093,401.44 has been expended for new construction and betterment work on the Roosevelt Coast, this amount having been provided, $1,189,951.75 by the State, $716,932.94 by the Federal Government (federal aid and forest highway funds), and $186,516.75 by counties. To complete contracts underway on September 30, 1930, will require a further expenditure of approximately $1,600,000.00.

The construction work performed on the Roosevelt Coast Highway during 1929 and 1930 has consisted of 38.9 miles of grading, 15.5 miles of rock surfacing, 0.2 mile of paving, 52.4 miles of bituminous macadam wearing surface, 127.7 miles of oiling, 14.2 miles of non-skid treatment of pavements, 45.4 miles of resurfacing, 24.2 miles of roadbed widening and regrading, and the construction of several bridges, chief among which are the Wahanna Creek and Nehalem River bridges in Clatsop county, the Beaver Creek and Big Creek bridges in Lincoln county and the Siltcoos River and Sutton Creek bridges in Lane county. The above mileages of work performed include 10.3 miles of grading work and 9.0 miles of rock surfacing work performed on forest highway projects.

Other accomplishments worthy of mention are the progress made in the construction of the $650,000 bridge over the Rogue River at Wedderburn, the completion of an undergrade crossing of the Southern Pacific Railway near Lakeside, and the construction of ferry landings at the south side of the Yaquina Bay crossing, at the north side of the Alsea Bay crossing, at the south side of the Siuslaw River crossing and at the north side of the Coos Bay crossing. The Rogue River bridge, above referred to, is now about 40 per cent complete, all of the main piers being in place and work underway on the approach spans.

The total length of the Roosevelt Coast Highway from its northern terminus at Astoria to the point where it enters the State of California. is 395 miles. Of this length, 58 miles are paved; 60 miles are surfaced with bituminous macadam; 137 miles are surfaced with oiled macadam; 84 miles are surfaced with unoiled crushed rock surfacing; 32 miles are graded ready for surfacing; 3.5 miles are ferry crossings of streams and 20.5 miles are unimproved.

From the mileages given in the above paragraph, it is apparent that completion of the highway requires only 20.5 miles of grading and 52.5 miles of surfacing. Of the grading work, 2.5 miles are under contract and the remaining 18 miles will be under contract before the end of 1930. Of



OBLIQUE AERIAL VIEW SHOWING THE ROOSEVELT COAST HIGHWAY: CROSSING OF THE ROGUE RIVER AT GOLD BEACH AND WEDDERBURN; A REINFORCED CONCRETE BRIDGE, 1,896 FEET IN LENGTH IS UNDER CONSTRUCTION AT THIS CROSSING.

the surfacing work, 11.5 miles are under contract and present plans call for the contracting of the remaining 41 miles during 1931. Barring some unforeseen contingency, the entire highway will be completed and open to all-year-round traffic by the end of 1932. Free ferries will be operated at the crossings of Yaquina Bay, Alsea Bay, Siuslaw River, Umpqua River and Coos Bay.

The expenditures made to date in connection with the improvement of the Roosevelt Coast Highway, inclusive of expenditures in connection with forest projects, have aggregated slightly more than $13,700,000. Of this amount, the State has contributed $8,100,000, the Federal Government $3,700,000, and the counties $1,900,000.

Reference to the state highway map which appears in Part Four of this report, will give a clear idea as to where the improvement work so far performed has been done, and as to what portions of the highway yet remain to be improved. It will be noted that the improvement is continuous from the California line north to Reedsport and from Astoria south to Yachats. These two long stretches of continuous improvement make approximately 85 per cent of the total length of the highway available for use, and they open up to the motorist a very large proportion of the beautiful scenery and other interesting attractions for which the Roosevelt Coast Highway is soon to be renowned.

PAVING

During the 1929-1930 biennium, five paving projects were undertaken. The names and lengths of these projects are as follows:—

Canemah-New Era Section of Pacific Highway	4.4 miles
Beaverton-Multnomah County Line Section of Tualatin Valley Highway	3.9 miles
Sandy-Multnomah County Line Section of Mt. Hood Highway	6.8 miles
Medford-Phoenix Section of Pacific Highway	5.9 miles
Klamath Falls-Lakeview Junction Section of The Dalles-California Highway	3.9 miles
Total	24.9 miles

With the exception of 0.7 mile on the Sandy-Multnomah County Line Section, which 0.7 mile remains to be paved in 1931, all of these projects were completed. All of the pavements were of 20-foot width, and all were of the Portland cement concrete type, except the one on the Medford-Phoenix Section. On the Medford-Phoenix Section the pavement was a combination type consisting of 16 feet of bituminous concrete pavement confined between Portland cement concrete shoulders, each shoulder having a width of two feet. On this project, an existing 16-foot concrete pavement was utilized as a base for the bituminous concrete portion of the pavement, the new concrete shoulders having been constructed along the edges of the old pavement and the bituminous concrete materials having been placed on top of the old pavement.

The concrete pavements were all nine inches thick at the edges and seven inches thick at the center, the taper from nine inches to seven inches all occurring within the outer three feet of pavement width. In the combination type pavement laid on the Medford-Phoenix Section, the concrete shoulders were nine inches in thickness and the bituminous concrete portion of the pavement was of an average thickness of approximately three inches, the thickness varying on account of irregularities in the surface of the old pavement.

Two notable advancements made during the biennium in the Department's methods of constructing pavements were the adoption of the practices of machine finishing and of proportioning aggregates by weight. The practice of proportioning aggregates by weight was used on all of the projects undertaken, and machine finishing was used on all except the Canemah-New Era and the Klamath Falls-Lakeview Junction projects. Both practices were found to have advantages sufficient to warrant their adoption as standard.

Since the beginning of the state highway construction program in 1917, the State has constructed 793.4 miles of pavement (including 54.0 miles of repaving), which mileage, together, with the mileages constructed by Multnomah county and by incorporated cities and towns, brings the pavement on state highway routes to a total of 906.6 miles of which 683.8 miles is bituminous pavement and 222.8 miles is concrete pavement.

The Portland-Washington County Line Section of the Tualatin Valley Highway, which section is 1.7 miles in length, was paved with concrete by Multnomah county during 1930. This pavement was of the super-highway type, consisting of two strips, each 20 feet in width, separated by a strip of crushed rock surfacing four feet in width.

BROKEN STONE AND CRUSHED GRAVEL SURFACING

The broken stone or crushed gravel surfacing, which for many years was looked upon as a temporary and quite unsatisfactory type of construction has, as a result of recent developments in oiling and in bituminous macadam wearing surface construction, taken its place as a lasting and otherwise desirable type of highway surfacing. Broken stone or crushed gravel surfacing, properly treated with oil or provided with a bituminous macadam wearing surface, and properly maintained, is dustless and easy riding and renders very satisfactory service.

Practically all of the broken stone and crushed gravel surfacing recently constructed by the Highway Commission has been constructed with the view of being either oiled or topped with a bituminous macadam wearing surface within a very short time after it is constructed. The heavy top course of fine materials that is required in broken stone and crushed gravel surfacing that is to be maintained as dry macadam, has been largely omitted, and the quantities thus saved have been utilized to thicken the base and sub-base courses. On many projects the keying and water-binding of the surfacings has been resorted to as a means of increasing the strength and of affording better foundations for the bituminous macadam and oil wearing surfaces.

The broken stone and crushed gravel surfacings are being constructed to widths of 18 and 20 feet and to thickness varying from 8 to 12 inches. The costs run from about $6,000 to about $9,000 per mile.

During the 1929-1930 biennium, 280.7 miles of broken stone and crushed gravel surfacing (including 155.8 miles of resurfacing) were constructed on the State Highway System by the State, and 31.9 miles were constructed on the State Highway System by the Federal Government, this latter work being of the class commonly referred to as forest highway work. Among the larger and more important of the state surfacing projects were the 15-mile section on the Santiam Highway between Lebanon and Sheas Hill, the 13-mile section on the Central Oregon Highway between Sage Hen Hill and Burns, the 15-mile section on the same highway between Harper and Vale, the 8-mile section on the Klamath Falls-Lakeview Highway between Dairy and Bly Mountain, the 20-mile section on the Old Oregon Trail between Kamela and La Grande, the 21-mile section between Baker and Durkee, the 11-mile section between Neskowin and Otis, the 12-mile section between Riverton and Bandon, the 11-mile section between Denmark and Port Orford and the 10-mile section on the Mt. Hood Highway between Rhododendron and Government Camp.

GRADING

Of a total of approximately $8,750,000 expended during the biennium for new construction and betterment work, $3,500,000 was expended for grading work. This expenditure has netted the State 273.7 miles of new highway roadbed and 195.6 miles of roadbed widening, besides much betterment work of a minor nature such as the widening of embankments, flattening of curves, improvement of alignment, etc.

The grading operations of the two-year period have resulted in bringing to completion the grading work on four more of the state's highways, the highways affected being the Klamath Falls-Lakeview Highway, the Ochoco Highway, the Wapinitia Highway and the Crooked River Highway. Grading has also been brought to completion on the 132-mile section of the Central Oregon Highway between Bend and Burns and on the 48-mile section of the Fremont Highway between Silver Lake and the junction of the Fremont Highway with The Dalles-California Highway.

It is not possible to here mention all of the many units of highway on which grading work has been performed during the biennium, but to give some idea as to where the grading operations have been in progress, the highways on which more than ten miles of grading or regrading work has been performed are listed as follows:

Westside Pacific Highway	12 miles
Old Oregon Trail	74 miles
Central Oregon Highway	114 miles
Oregon-Washington Highway	13 miles
Roosevelt Coast Highway	63 miles
McKenzie Highway	18 miles
Fremont Highway	65 miles
Ochoco Highway	25 miles
Sherman Highway	16 miles
Pendleton-John Day Highway	14 miles

In addition to the grading work performed under the direct supervision of the State Highway Commission, 43.8 miles of new roadbed construction and 5.5 miles of regrading work have been performed on state highway routes through national forests under the supervision of the U. S. Bureau of Public Roads.

The width of roadbed now in use on state highway work varies from 22 feet on the lighter traveled roads in mountainous country to 36 and 42 feet on heavily traveled roads in level country. On the more important State highways through mountainous country, the standard width is

26 feet between ditches in cut and 28 feet in embankment. The maximum gradient on the main highways is 5 per cent and the minimum curve radius is 500 feet. The same standards of grade and curvature apply on highways of lesser importance, except that in extreme cases 6 per cent grades and 200-foot radius curves are used.

To insure the safety of motorists, substantial guard fences are constructed on the outsides of sharp curves and along the shoulders of high embankments. Also, at the time the roadbed is graded, all curves are banked or super-elevated in anticipation of the super-elevation of the surfacing when that is added.

BRIDGES

During the period covered by this report, the State has completed the construction of 50 bridges on the state highway system aggregating in cost $1,156,339, and has supervised the construction of 42 bridges on market and county roads aggregating in cost approximately $329,000.

The total estimated cost for structures for which designs were prepared during the biennium amounts to $2,496,617.00 which sum may be conveniently segregated as follows:

$1,708,148 representing the cost of 55 bridges on the state highway system having spans of 20 feet or more.

$61,407 representing the cost of 17 bridges on the state highway system having spans less than 20 feet.

$106,120 representing the cost of 18 structures other than bridges.

$620,984 representing the cost of bridges and culverts designed for counties.

A comparison with the report covering the activities of this department during the preceding biennium will show a marked increase in the number of structures designed. During the current period, 55 designs for major bridges were prepared, as against 23 for the preceding biennium; 17 designs for minor bridges as against 6 for the preceding period; 18 building designs as against 8, and 46 designs for county bridges as against 35 in the preceding period. The average cost per structure is almost the same as for the preceding biennium.

The summary appended to this section of the report indicates the total number of structures designed and constructed by the department during this biennium. Among the more important of these structures may be mentioned the Rogue River Bridge at Wedderburn, the Rogue River Bridge at Grants Pass, the Klamath River Bridge at Keno, and the Wilson River Bridge near Tillamook.

The Rogue River Bridge at Wedderburn, which is the longest and most expensive structure to be put under construction on the state highway system to date, will consist of seven 230-foot reinforced concrete arch spans with a concrete viaduct approach structure at either end. The total length of this structure will be 1,898 feet. The roadway width will be 27 feet with a sidewalk on either side.

The design and construction of this structure embodies the use of a method of decentering and stress control which is entirely new in the United States. This system which is termed the Freyssinet System, after the French engineer Ernest Freyssinet, consists essentially in the employment of hydraulic jacks inserted at the crown of each arch ring by means of which the ribs may be lifted from their centers and adjusted to a fixed and determinate position. This system of stress control results in the elimination of those secondary stresses caused by shrinkage, thermal changes and plastic support displacements which occur prior to the final keying operation. It is estimated that the employment of this system resulted, in this instance, in the saving of approximately 3,500 cubic yards of concrete.

As above stated, this bridge will constitute the first instance of the employment of the Freyssinet method in the United States, and the State Highway Department in conjunction with the United States Bureau of Public Roads, is making this structure a cooperative research project. Precise measurements of stress and strain will be taken during the process of arch rib adjustment, and the results of this experimentation, together with an analysis of the advantages gained through the use of this system will be published as a government bulletin.

The contract for this bridge was awarded to the Mercer-Fraser Company of Eureka, California, on January 16, 1930. The contract price was $568,181.00.

The Grants Pass Bridge, which is also a crossing of the Rogue River, consists of a series of three 150-foot reinforced concrete half-through arch spans flanked at either end by a 50-foot reinforced concrete approach viaduct. The roadway is 27 feet, with a sidewalk on either side. The bridge being immediately south of the city limits of Grants Pass and immediately adjacent to the city park, considerable attention was given to architectural detail.

One of the interesting engineering features involved in the design and construction of this structure was the use of temporary construction hinges at crown and skewbacks in order to eliminate a certain portion of the shrinkage, thermal and settlement stresses. These temporary construction hinges are of small cross-section, and heavily reinforced with both longitudinal bars and spiral hoops and their utility depends upon the fact that such construction when heavily stresed is more or less plastic, yielding readily under load and thus enabling the arch ribs to shift their position to accommodate shrinkage, thermal and settlement effects without setting up corresponding rib stresses. After the initial shrinkage and thermal effects have taken place, and after the foundations have taken their initial plastic strain, these temporary hinges are keyed in or fixed, thus converting the arch into a true hingeless type under live load and subsequent shrinkage and thermal stresses.

The contract for this structure was awarded to J. K. Holt on February 10, 1930, the amount of the contract being $119,915.

The bridge over the Klamath River at Keno consists of a series of three 100-foot reinforced concrete arches with concrete approach viaduct at either end. The total length of the structure is 370 feet. The roadway width is 24 feet with a sidewalk on either side. The general design of the structure is quite similar to that of the bridge over the Rogue River at Grants Pass, the architectural treatment is, however, somewhat more severe.

Contract for this bridge was awarded to the Clackamas Construction Company March 27, 1930. The contract price was $49,690.

The Wilson River Bridge near Tillamook consists of a reinforced concrete arch of the bow string type, the span length being 120 feet. The entire arch is above the deck level and rests upon concrete piers in the same manner as an ordinary truss or girder bridge.

Contract for this structure was awarded to the Clackamas Construction Company on September 24, 1930. The contract price was $44,342.

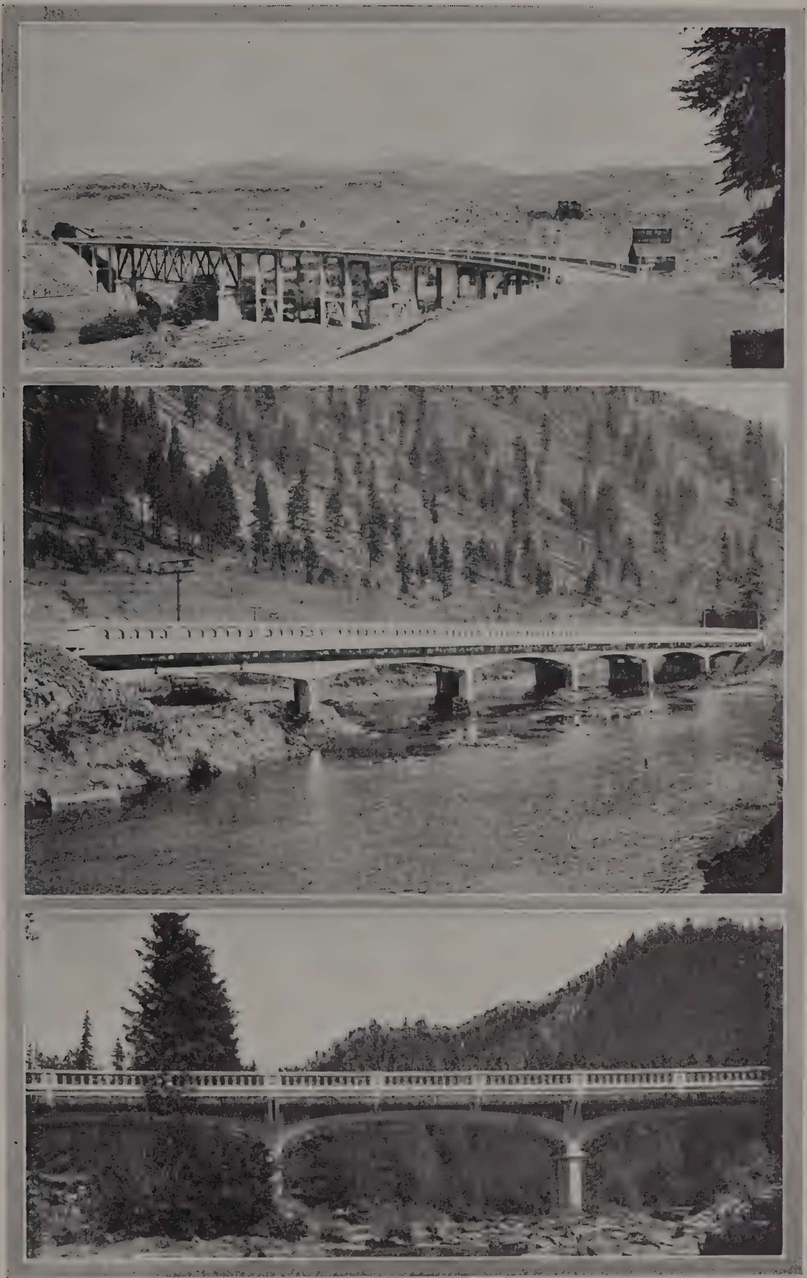
In addition to the bridges on the state highway system, a number of designs have been prepared for structures on the various market and county roads of the state. Among the counties for whom a considerable amount of this work was done may be mentioned Marion County, for which 18 designs were furnished. Eleven of these designs were for bridges 60 feet or more in length. Two steel spans were also furnished for Clackamas County; one over the Clackamas River, 180 feet in length, and one over the Molalla River consisting of two trusses each 90 feet long.

The department has also completed the design for a double leaf bascule draw bridge of 140-foot clear span over Isthmus Inlet near Marshfield in Coos County, this being a county project. The bascule proper is flanked on the west by 1,150 feet of concrete viaduct and one 113-foot steel truss span, and on the east by 60 feet of concrete and 225 feet of timber approach. The roadway width is 27 feet with a sidewalk on either side. The bascule span, together with the piers and approaches, has a total length of 1,758 feet.

Contract for this structure was awarded by Coos County to Liesch & Tofte of Marshfield, Oregon, on December 8, 1930. The contract price was $293,042.95.

Following up the use of the rigid frame idea in short span reinforced concrete construction which was inaugurated during the previous biennium, the department has constructed a number of monolithic viaducts during the current biennium; this type of design being not only more economical of material, but also susceptible of a more pleasing architectural treatment.

The operation of the ferries across the Rogue River at Gold Beach and across Coos Bay between North Bend and Glasglow, has been continued during the current biennium. The ferry "Roosevelt," taken over from Coos County during the previous biennium, has been outgrown on account of the increased traffic. To accommodate this increased travel, the department has purchased the ferry "Oregon" from the Longview Ferry Company at Longview, Washington, and now operates this on the Coos Bay run. The cost of this boat, including purchase price, towage and insurance amounted to $21,508.36. The boat has a capacity of 36 cars, and is powered with a 135 horsepower Diesel engine. The steam ferry "Roosevelt" has been retained at Coos Bay as an auxiliary boat to accommodate exceptionally heavy traffic, or as relief equipment in case of a breakdown on the principal ferry. New approaches and ferry slips which materially speed up the loading and unloading of the ferry boat have also been constructed at this crossing during the current biennium.



UPPER—DESCHUTES RIVER BRIDGE ON THE DALLES-CALIFORNIA HIGHWAY AT MAUPIN; CENTER—GRANDE RONDE RIVER BRIDGE ON THE OLD OREGON TRAIL NEAR HILGARD; LOWER—BLUE RIVER BRIDGE ON McKENZIE HIGHWAY AT BLUE RIVER

The following tabulation is a summary of departmental activities as regards the design and construction of bridges and other structures:

1. Number of designs prepared for bridges 20 feet or more in length, on the state highway system	55
Total estimated cost of the above	$1,708,148.63
2. Number of special designs prepared for bridges less than 20 feet in length, on the state highway system	17
Total estimated cost of the above	$ 61,407.00
3. Number of designs prepared for structures other than bridges	18
Total estimated cost of the above	$ 106,120.28
4. Number of designs prepared for bridges not on state highway system	46
Total estimated cost of the above	$ 620,984.81
5 Total number of designs prepared	136
Total estimated cost of all structures for which designs were prepared	$2,496,617.76
6. Number of bridges on which construction work was performed during biennium	105
Total cost of bridge construction completed during the biennium	*$1,478,802.28
7. Total number of structures other than bridges upon which construction was performed during the biennium	10
Total cost of above	$ 49,336.59
8. Total cost of bridge maintenance and bridge betterment work performed during the biennium	$ 362,959.83
9 Total cost of bridge construction, bridge maintenance and bridge betterment performed during the biennium	*$1,891,098.70

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* This amount is inclusive of the cost of county bridges built under the supervision of the State Highway Commission.

BETTERMENT WORK

Betterments include all improvements of a material nature that are made upon the highways subsequent to the period of initial construction. Included in this class of improvement are the widening and straightening of roadbeds, the improvement of foundations and drainage, the widening and thickening of pavement, the nonskid treatment of pavement, the change from a lower to a higher type of surface, the erection of guard fence, the replacement of wood structures by structures of more permanent type, the planting of trees and shrubs along the highways, et cetera.

For department purposes, betterments are classified in two groups, major betterments and minor betterments. In the class of major betterments are included those projects of a major nature which are handled either by contract or by large state force gangs working independent of the regular patrol organizations.

Minor betterment includes such betterment as is performed by small state force crews such as are used on general maintenance work.

During the past biennium (December 1, 1928, to September 30, 1930), the total expenditure for major betterment work amounted to $3,581,-

632.93. For the detail of this expenditure by projects, see Table X in Part Three of this report. A table of expenditures by classification of work is given below:

EXPENDITURES FOR MAJOR BETTERMENTS, 1929-1930

Item	Expended Dec. 1, 1928, to Dec. 31, 1929	Expended Jan. 1, 1930, to Sept. 30, 1930
Concrete Pavement (repaving)	$ 172,416.05	$ 84,009.73
Bituminous Pavement (repaving)	----------	100,574.45
Rock for Bituminous Pavement Betterment	----------	8,000.00
Rock Shoulders to Pavement	----------	21,161.30
Bituminous Macadam Wearing Surface	*139,711.99	429,497.78
Rock for Bituminous Macadam	56,631.57	254,750.92
Oil Treatment of Macadam	10,412.64	129,723.68
Rock for Oiling Macadam	----------	6,679.31
Non-skid Treatment of Pavements	----------	127,928.79
Rock for Non-skid Treatment	133.32	142,939.62
Broken Stone or Gravel Foundations	185,198.41	389,810.54
Bridge and Culvert Betterment	87,347.16	66,286.93
Bank Protection and Stream Control	862.36	----------
Regrading and Roadbed Widening	518,487.62	577,295.40
Ditching and Drainage Work	56,619.38	15,153.98
Totals	$1,227,820.50	$2,353,812.43

* Includes preliminary oil treatment to be followed by bituminous macadam construction the following year.

During the same 22-month period, there was expended for minor betterments the sum of $749,979.12, which amount comprises the following items:

EXPENDITURES FOR MINOR BETTERMENTS, 1929-1930

Item	Expended Dec. 1, 1928, to Dec. 31, 1929	Expended Jan. 1, 1930, to Sept. 30, 1930
Concrete Pavement (widening, resurfacing, etc.)	$ 4,634.02	$ 10.50
Bituminous Pavement (widening, resurfacing, etc.)	16,301.68	380.29
Non-skid Treatment of Pavements	118,342.27	* ----------
Concrete Shoulders to Pavement	----------	8.90
Rock Shoulders to Pavement	5,633.90	3,413.50
Oiled Shoulders to Pavement	----------	231.95
Bituminous Macadam Wearing Surface	71,374.40	4,135.11
Oiled Macadam Widening	9,146.03	2,029.41
Rock and Gravel Resurfacing	11,619.99	5,094.38
Regrading and Roadbed Widening	200,874.08	181,248.79
Bridge Betterment	43,859.62	27,298.46
Guard Fence	9,652.14	17,146.86
Snow Fence	10,376.25	1,049.03
Clearing of Dangerous Trees	----------	6,116.76
Totals	$ 501,815.18	$ 248,163.94

* Charges for 1930 non-skid treatment are carried as major betterments.

Some of the major features in connection with the betterment work performed during the past biennium were the construction of 232 miles of bituminous macadam wearing surface, the placing of nonskid wearing surface on approximately 227 miles of asphaltic concrete pavement, the placing of heavy surface oil treatments and road mix construction on approximately 93 miles of untreated macadam, the grade widening and straightening of 196 miles of highways, and the construction of heavy foundation courses of broken stone or crushed gravel on approximately 135 miles. A brief description of the above-mentioned types of betterment, and outline of the various specifications used in the work, and an analysis of the unit costs follows.

The bituminous macadam wearing surface consists of mechanically locked stone bound with asphaltic cement, the thickness ranging from one and one-half to four inches compacted, therein differing from the oiled surface treatments which are merely a carpet coat, from one-half to three-fourths of an inch in thickness. Both types are placed as a wearing course on a foundation of broken stone or crushed gravel. The bituminous macadam wearing course, when properly constructed, gives a smooth riding surface with a nonskid texture affording very good traction, even when wet. This specification is an intermediate type between oiled macadam and the more expensive pavements, and there is a definite place for its use. This is particularly true in Oregon, since there is within its boundaries great quantities of hard basaltic rock. This is commonly termed "trap rock" and is probably the best stone that can be used in road surfacing work. The vast plateaus of eastern and central Oregon were covered during the past geological ages with the great Columbia River basalt flows forming one of the largest outcrops of this wear-resisting stone to be found in the world. This rock is easily available in large quantities and can be crushed quite cheaply, resulting in a relatively low cost for the construction of waterbound macadam bases and bituminous macadam wearing surfaces.

During the past biennium, there was constructed 211.34 miles of bituminous macadam under the major betterment classification and the expenditures against this type amounted to $880,592.26 which equals approximately $4,166 per mile. This, however, does not represent the true expenditure for the mileage constructed inasmuch as the practice of this Department has been to contract the production of the broken stone or crushed gravel for the bituminous macadam under a separate contract, generally one year in advance of the building of this type of wearing surface. In consequence, the amount of $569,209.77 represents the charge on the books for all items in connection with the construction of the bituminous macadam wearing surface except the manufacture of the broken stone. The charge of $311,382.49 represents the cost of the manufacture of the stone which was placed in stockpiles, a portion of which was used in 1930 and the remainder for 1931 construction. In consequence, in order to show the accurate cost per mile and the unit costs of the various specifications for the construction of the bituminous macadam wearing surface, it will be necessary to complete this analysis at the end of the fiscal year, at which time all the charges will be listed. The cost of the production of broken stone which was incorporated in the work during 1929 and 1930 will be added to the cost of the contract prices for building the bituminous macadam in order to accurately show the true cost of this construction. This was the method followed in the tabulations under "Cost of Bituminous Macadams Constructed in 1929."

OUTLINE OF SPECIFICATIONS FOR BITUMINOUS MACADAM CONSTRUCTION

(Width of Roadway, 18 feet)

Specifications	B-1	B-2	B-3	B-6	B-7	B-9	B-12
Compacted Thickness	1½"	2"	2½"	2⅛"	2⅞"	3⅝"	4¾"
Rock, cu. yds. per mile	576	798	1,020	855	1,146	1,463	1,885
Grade "E" Asphalt, gals. per sq. yd.	.90	1.20	1.50	1.20	1.55	1.95	2.35
Grade "E" Asphalt, gals. per mile	9,504	12,672	15,840	12,672	16,368	20,592	24,816
Grade "E" Asphalt, tons per mile	41	55	68	55	71	89	111
Tack Coat							
Grade "E" Asphalt, gals. per sq. yd.	.15	.15	.15	.15	.15	.15	.15
First Lift							
2½"-1½" Rock, cu. yds. per sq. yd.	....	....	....	....	....	.04	.06
2"-1½" Rock, cu. yds. per sq. yd.....	....	....	....	.045	.05	....	....
1½"-¾" Rock, cu. yds. per. sq. yd.	.021	.021	.021	....	....	....	....
Grade "E" Asphalt, gals. per sq. yd.	.30	.30	.30	.60	.60	.50	.65
Second Lift							
2½"-1½" Rock, cu. yds. per sq. yd.	....	....	....	....	....	.04	.06
1½"-¾" Rock, cu. yds. per sq. yd.....	....	.021	.021	....	.025	....	....
Grade "E" Asphalt, gals. per sq. yd.	....	.30	.30	....	.35	.50	.75
Third Lift							
1½"-1" Rock, cu. yds. per sq. yd.....	....	....	....	....	....	....	.025
1½"-¾" Rock, cu. yds. per sq. yd.....	....	....	.021	....	....	.025	....
Grade "E" Asphalt, gals. per sq. yd.	....	....	.30	....	....	.35	.35
Fourth Lift							
1½"-¾" Rock, cu. yds. per sq. yd.....	....	....	....	....	....	....	....
Grade "E" Asphalt, gals. per sq. yd.	....	....	....	....	....	....	....
Key Rock							
1"-½" Rock, cu. yds. per sq. yd.........	....	....	....	.015	....	....	....
¾"-½" Rock, cu. yds. per sq. yd.......	.0125	.0125	.0125	....	.0125	.0125	.0125
First Seal Coat							
Grade "E" Asphalt, gals. per sq. yd.	.25	.25	.25	.25	.25	.25	.25
½"-⅛" Rock, cu. yds. per sq. yd.....	.009	.009	.009	.009	.009	.009	.009
Second Seal Coat							
Grade "E" Asphalt, gals. per sq. yd.	.20	.20	.20	.20	.20	.20	.20
½"-⅛" Rock, cu. yds. per sq. yd.....	.009	.009	.009	.009	.009	.009	.009
Sand, cu. yds. per sq. yd.	.003	.003	.003	.003	.003	.003	.003

Note: The quantities of asphalt shown in the above tabulation are for "hot" asphalt, and since the asphalt is shipped cold and expands considerably upon being heated it is assumed that the expansion will be sufficient to take care of any waste that may occur. The quantities shown above should therefore be used when estimating or ordering material. The asphalt referred to is 130-150 penetration.

The rock quantities are "net," and 5 per cent should be added to take care of waste when estimating quantities to be stockpiled.

During the past biennium, 69.52 miles of heavy surface treatment, approximately one inch in thickness, and 23.85 miles of road mix construction, two and one-half inches in thickness, were built at a cost of $140,136.32. All but 22.69 miles of this work was handled by contract. This work, on account of the nature of the improvement, was classified as a betterment.

During the past biennium, 135 miles of macadam roads were reconstructed by building a heavy foundation course of broken stone or crushed gravel, so that they would be in condition to carry the heavy loads of modern traffic. Approximately 59 miles of this distance were roads that had been previously oiled but which had indicated distress due to the heavy loads, especially along the edges of the surface. The sum of $575,009.95 was expended in the reconstruction of this 135 miles, which equaled an average cost of approximately $4,259 per mile. The increased depth of the foundation which was added by this procedure ranged from four to nine inches compacted.

UNIT COSTS OF BITUMINOUS MACADAM CONSTRUCTION—1929

(Cost of engineering supervision not included)

Specification Number	Compacted Thickness (inches)	Miles Constructed	TOTAL COST		COST PER MILE		COST PER SQUARE YARD	
			Rock Cost Included	Rock Cost Excluded	Rock Cost Included	Rock Cost Excluded	Rock Cost Included	Rock Cost Excluded
Spec. B-1	1½	20.43	$ 66,745.12	$ 46,358.18	$ 3,267.02	$ 2,269.12	$ 0.3091	$ 0.2148
Spec. B-2	2	9.22	39,446.58	27,150.23	4,278.37	2,944.71	0.4047	0.2786
Spec. B-3	2½	16.18	93,965.13	67,115.68	5,807.48	4,148.06	0.5494	0.3924
Spec. B-9	4*	5.13	46,529.40	33,827.80	9,070.06	6,594.11	0.8580	0.6238
Totals		50.96	$246,686.23	$174,451.89	$ 4,840.78	$ 3,423.31	$ 0.4584	$ 0.3242

AVERAGE COSTS OF BITUMINOUS MACADAM SURFACING, INCLUDING MACADAM BASE

(Macadam base 18 feet wide and 6 inches in compacted thickness)

Thickness of Bituminous Macadam Wearing Course	Thickness of Macadam Base	Total Compacted Thickness	Width	Per Mile Cost of Wearing Course	Per Mile Cost of Macadam Base	Total Cost Per Mile	Total Cost Per Square Yard
1½ inches	6″	7½″	18′	$3,267	$5,500	$8,767	$0.8302
2 inches	6″	8″	18′	4,278	5.500	9,778	0.9259
2½ inches	6″	8½″	18′	5,807	5,500	11,307	1.0707
4* inches	6″	10″	18′	9,070	5,500	14,570	1.3797

Note: In general the bituminous macadam wearing surfaces were placed on macadams that had been in use for a number of years. Hence, the cost of the base was not a current charge.

* Average thickness 4 inches. Thicker at edges than at center.

The Highway Commission has continued the practice of placing a non-skid wearing surface on slippery asphaltic concrete pavements to alleviate the danger of skidding and resulting loss of life and property. It is thought that the certainty of traction in wet weather more than offsets the slight extra wear on tires that the non-skid texture causes.

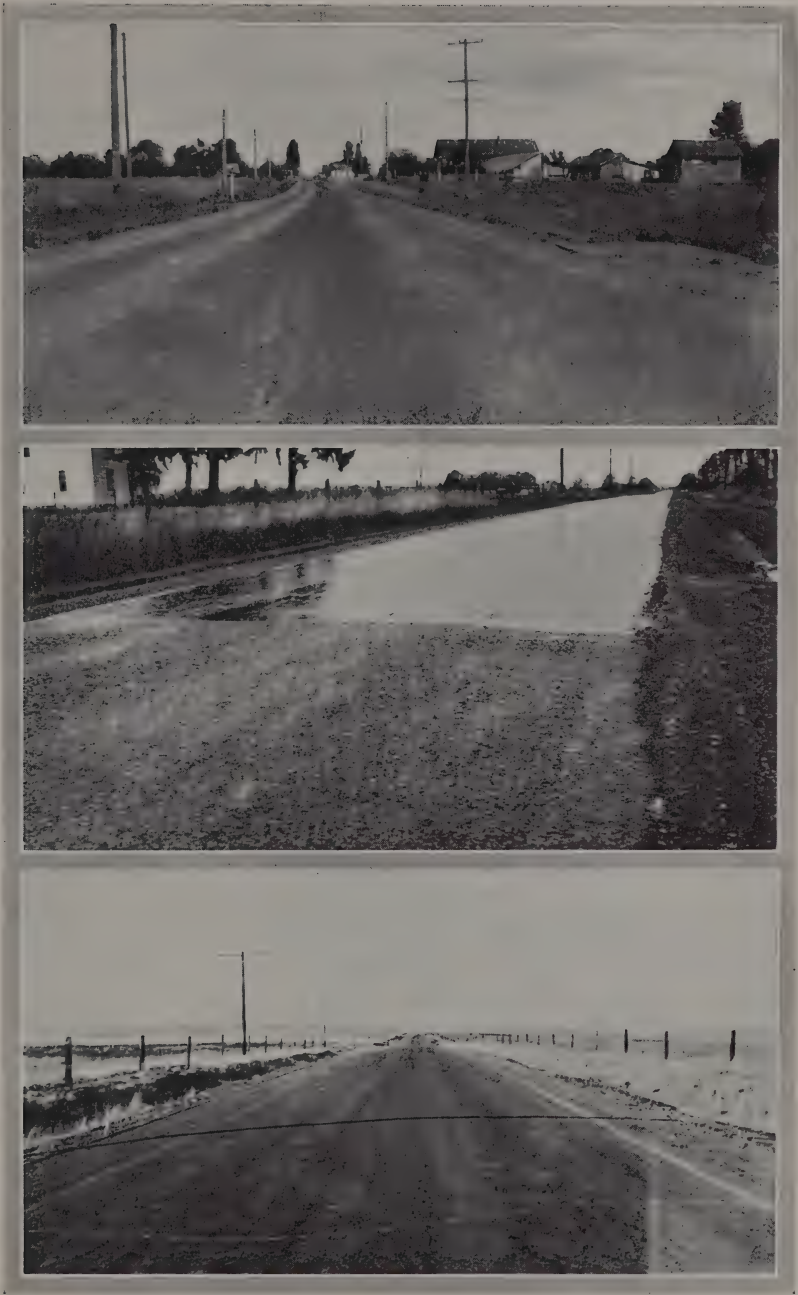
During the season of 1929, 103.03 miles of asphaltic concrete pavement were surfaced with a non-skid treatment consisting of a mat of heavy tar and small stones. The tar after being heated to a temperature of 275 degrees Fahrenheit was spread at the rate of one-fifth gallon per square yard, followed by a cover of 1⅛″ to ½″ stone at the rate of .01 cubic yard per square yard, which was spread smooth by broom graders and hand brooms and rolled with ten-ton rollers, after which a spread of screenings ½″ to ⅛″ in size were spread at the rate of .005 cubic yard per square yard followed by brooming and rolling. On some sections the coarse rock varied from ¾″ to ½″ and from 1″ to ½″ in size rather than 1⅛″ to ½″ size mentioned. In fact, the large size was used on only about 20 per cent of the mileage. However, the large rock was so much better that it was decided to increase the size to 1¼″ to ¾″ for the work proposed during the season of 1930.

The total cost of the construction of 103.03 miles of non-skid wearing surface was $118,585.59 including the cost of the cover stone. The unit cost was 12 cents per square yard, or $1,150 per mile of 16-foot surface.

During 1930, 123.96 miles of non-skid wearing surface was completed under the following specifications:

	Specification N-1		Specification N-2	
	Binder (gallons per square yard)	Rock CY Per Square Yard	Binder (gallons per square yard)	Rock CY Per Square Yard
First spread of binder	.10		.10	
Spread of coarse stone		.02		.03
Second spread of binder	.20		.30	
Spread of fine stone		.01		.01
Totals	.30	.03	.40	.04

The binder consisted of a heavy tar or 130-150 per cent penetration grade "E" asphalt. The coarse stone was from 1¼ inches to ¾ inch in size and the fine stone from ¾ inch to ¼ inch in size. The stone was hand spotted, broomed and rolled with 10-ton rollers. The total expenditure for non-skid treatment during 1930 will amount to about $270,000, this amount being inclusive of the cost of the stone which was produced under separate contracts. Unit costs for the 1930 work can not be shown for the reason that at the time this report goes to press, complete cost informatioin is not available.



UPPER—NON-SKID WEARING SURFACE TUALATIN VALLEY HIGHWAY NEAR CORNELIUS; CENTER—VIEW SHOWING DIFFERENCE IN TEXTURES OF NON-SKID WEARING SURFACE AND ORDINARY BITUMINOUS PAVEMENT; LOWER—BITUMINOUS MACADAM ON SHERMAN HIGHWAY IN SHERMAN COUNTY

MAINTENANCE WORK

Maintenance is distinguished from betterment in that it includes such work as is necessary to keep the highways and their appurtenances in good condition, and to prevent the depreciation of the capital investment. As a matter of convenience for departmental purposes, maintenance is separated into two classes: Special Maintenance and General Maintenance.

MAINTENANCE TABLE "A"

TOTAL AND UNIT MAINTENANCE COSTS FOR YEAR 1929

(December 1, 1928, to December 31, 1929)

Item	General Maintenance Charges	Special Maintenance Charges	Total Maintenance Charges	Miles Maintained	Cost Per Mile (13 mo.)	Cost Per Mile (12 mo.)
1. Pavement:						
(a) Concrete Pavement	$ 7,225.19	$	$ 7,225.19	194	$ 37	$ 34
(b) Bitumionus Pavement	199,046.92	....	‡ 199,046.92	534	373	344
(c) Rock for Bit. Pav. Repair	....	6,179.16	6,179.16	....	....	....
2. Shoulders to Pavement:						
(a) Concrete Shoulders	9.98	....	9.98	12	1	1
(b) Oiled or Bituminous Macadam Shoulders*	11,468.03	....	11,468.03	66	174	161
(c) Rock or Gravel Shoulders	54,888.98	....	54,888.98	649	85	78
3. Bituminous Macadam:						
(a) Maintenance of Surface	51,470.10	....	51,470.10	143	359	331
(b) Crushed Rock for future Bit. Mac. Maintenance	....	17,415.64	17,415.64	....	....	....
(c) Crushed Rock for future Construction	....	29,213.79	29,213.79	....	....	....
4. Oiled Macadam:						
(a) New oiling **	250,008.40	....	250,008.40	227	1,101	1,101
(b) Re-oiling	327,471.02	....	327,471.02	482	679	679
(c) Maintenance Oiled Surface	357,983.13	....	357,983.13	1,174	305	282
(d) Crushed Rock for future Maint. and New Oiling	....	122,653.86	122,653.86	....	....	....
5. Rock or Gravel Surfacing:						
(a) Ordinary Maintenance	309,720.09	....	309,720.09	1,249	248	229
(b) Unusual Maintenance	30,495.66	....	30,495.66	1,249	24	22
(c) Resurfacing	....	322,916.76	322,916.76	1,249	258	258
6. Roadbed and Right-of-way:						
(a) General Maintenance	370,206.89	....	370,206.89	3,552	104	96
(b) Removal of Slides	83,436.78	....	83,436.78	....	....	....
(c) Cutting and Burning Weeds and Brush	56,972.41	....	56,972.41	3,552	16	15
(d) Guard Fence	23,851.70	....	23,851.70	....	....	....
7. Bridges Maintenance	153,662.48	....	153,662.48	....	....	....
8. Snow Removal	173,089.36	....	173,089.36	3,552	49	45
9. Prospecting for Quarries and Gravel Pits	7,623.12	....	7,623.12	....	....	....
10. Road Signs and Traffic Strips	24,410.90	....	24,410.90	3,553	7	6
11. Tree Maintenance	1,486.35	....	1,486.35	....	....	....
12. General Superintendence	135,673.07	....	135,673.07	3,553	38	35
Total	$2,630,200.56	$ 498,379.21	$3,128,579.77	3,553	$ 881	$ 813

‡ Heavy maintenance caused by repair in preparation for non-skid wearing surface, 1930 program.

* Includes cost of new shoulders.

** Includes only the new oiling performed by state forces. Approximately 7 miles performed under contract, classified as betterment.

The term "special maintenance" is applied to those features involving major maintenance operations which are carried on either by contract or large state force gangs. The resurfacing of macadams and the crushing and stock-piling of maintenance materials are examples of this class of work. This work is in the nature of replacements and is termed reconstruction by some states, therefore not appearing in their reports as a maintenance charge. However, since it replaces the loss of capital investment, it is properly a charge against maintenance. This, however, does not include the larger jobs involving the construction of deep foundations of broken stone or crushed gravel to reinforce those sections which have proven inadequate to carry traffic and which involve, in most cases, the placing of a larger amount of broken stone or crushed gravel than was originally placed. Such work is properly carried as "betterment."

The term "general maintenance" covers the class of operation which is carried on solely by state forces and which, for the major part, is the activity of permanent patrol gangs. It also includes such maintenance work as is performed by the state paving plants and oiling crews which operate in specially organized extra gangs separate and apart from the regular patrols.

MAINTENANCE TABLE "B"

MAINTENANCE EXPENSE FOR FIRST NINE MONTHS OF 1930

Item	General Maintenance Expense	Special Maintenance Expense	Total Maintenance Expense	Miles Maintained
1. Pavement:				
(a) Concrete Pavement	$ 2,550.22	$	$ 2,550.22	199
(b) Bituminous Pavement	101,376.22	493.57	101,869.79	533
2. Shoulders to Pavement:				
(a) Concrete Shoulders	7,004.24	....	7,004.24	12
(b) Oiled or Bit. Mac. Shoulders	3,667.18	....	3,667.18	66
(c) Rock or Gravel Shoulders	30,472.74	....	30,472.74	670
3. Bituminous Macadam:				
(a) Maint. of wearing surface	30,736.84	....	30,736.84	249
4. Oiled Macadam:				
(a) New Oiling *	111,509.72	....	111,509.72	96
(b) Re-oiling	202,992.46	....	202,992.46	282
(c) Maintenance of Oiled Surface	223,095.92	37,232.51	260,328.43	1,303
5. Rock or Gravel Surfacing:				
(a) Ordinary Maintenance	190,186.70	....	190,186.70	1,146
(b) Unusual Maintenance	27,191.05	....	27,191.05	1,146
(c) Resurfacing	....	57,378.19	57,378.19	....
6. Roadbed and Right-of-way:				
(a) General Maintenance	253,578.35	....	253,578.35	3,672
(b) Removal of Slides	61,366.50	....	61,366.50	....
(c) Cutting and Burning Weeds and Brush	49,778.34	....	49,778.34	....
(d) Guard Fence	15,075.97	....	15,075.97	....
7. Bridges Maintenance	138,139.27	....	138,139.27	....
8. Snow Removal and Snow Fence	125,553.52	....	125,553.52	....
9. Prospecting for Quarries and Gravel Pits	1,936.30	....	1,936.30	....
10. Road Signs and Traffic Strips	18,012.43	....	18,012.43	....
11. Tree Maintenance	1,306.14	....	1,306.14	....
12. General Superintendence	94,779.69	....	94,779.69	....
Totals	$1,690,309.80	$ 95,104.27	$1,785,414.07	

* Includes only the new oiling performed by state forces. Approximatley 78 miles performed under contract, classified as betterment.

The expenditures for general maintenance during the 22-month period from December 1, 1928, to September 30, 1930, amounted to $4,320,510.36; of this amount, $2,630,200.56 was expended during the first 13 months of that period and $1,690,309.80 during the last nine months. Detailed statements of the expenditures made during the first 13 months (fiscal year 1929), together with statements of the various classes of the maintenance work performed and the per mile cost thereof, appear in Maintenance Table "A." As expenditure figures are available for only nine months in 1930, no attempt will be made to give unit costs for the year 1930. Maintenance Table "B" for the year 1930 is, therefore, only a partial statement of the 1930 expenditures for maintenance purposes.

The work accomplished under the head of "general maintenance" has included, in addition to the general work of the upkeep of 3,553 miles of state highways, the conversion of approximately 405 miles of rock and gravel surfacings into oiled macadams.

The expenditures for "special maintenance" for the past two years amounted to $593,483.48, of which $498,379.21 was expended during 1929 and $95,104.27 during 1930. Included in this cost was the resurfacing of 94 miles of broken stone or crushed gravel surfaced roads and the stock-piling of approximately 96,805 cubic yards of crushed gravel or broken stone for use in connection with maintenance operations. A detailed analysis of the above costs appears in Maintenance Table "A" and a partial analysis in Maintenance Table "B."

In the articles that follow, some of the more important and more interesting phases of the maintenance operations are taken up and separately discussed under the headings: Patrol Maintenance, Bituminous Pavement Repair Work, Oiled Macadams, Snow Removal and The Road Magnet Sweeper.

PATROL MAINTENANCE

For maintenance purposes, the state highways are divided into sections, called "patrols", these patrols varying in length from 15 to 50 miles depending on the type of surface, the climatic conditions and the character and density of traffic. The change from a lower to a higher type of surface, for instance, from untreated macadam to oiled macadam, bituminous macadam or pavement, many times makes possible the lengthening of a patrol section, which lengthening may materially reduce the per mile cost of labor, materials and equipment. Each patrol section is in charge of a working foreman designated as the "patrolman", who is held directly responsible for the condition of his particular patrol. The patrolmen are furnished with trucks, graders and other equipment and the necessary small tools and supplies, and for the care and upkeep of these, they are held strictly accountable.

The work of the patrol gangs consists of the blading and dragging of macadam surfacing, the sanding of pavements, the filling of cracks in concrete pavements, the repairing of pavements, bituminous macadams and oil treated macadam surfacing, the cleaning of ditches and culverts, the removal of snow, and such other work as is necessary to keep the highways in good condition.

A number of the patrols are provided with equipment sheds in which to store and house the equipment and supplies. In certain instances in isolated districts, the patrolmen are furnished with houses for their families, for which they are charged a rental sufficient to pay the interest and to cover the depreciation on the investment.

OILING OF CRUSHED ROCK AND GRAVEL SURFACING

It is true in this state, as in most others, that gravel and broken stone macadam is, on account of its relatively low first cost, the dominate type of surfacing for highways. In view of the rapid increase in traffic, it became necessary in the interests of economical maintenance to endeavor to preserve these surfaces from the disintegration that became more and more manifest as the traffic increased. Untreated macadams are dusty in proportion to the traffic, and a rapid loss of thickness is evident by reason of the fines being sucked out of the macadam by the fast-moving pneumatic tires, and the small stones being thrown entirely off the roadbed. This decrease in thickness is quite marked and totals a huge annual expense in maintenance charges. Moreover, the loss to the motorist due to the excessive tire wear and the injury caused by the fine dust to the working parts of the motor, the chassis and the upholstery by reason of the operation of the motor vehicle over loose, dusty and rough macadam surfaces, is probably much greater than the loss in maintenance and upkeep cost to the state. Inasmuch as the motor car owner ultimately pays both charges, he is doubly interested. To remedy this condition the State Highway Commission in 1923 began the use of asphaltic oils and tars as a surface treatment for macadam.

OUTLINE OF SPECIFICATIONS FOR OIL SURFACE TREATMENT

(Specifications: Original Oiling 0-1 to 0-10. Reoiling 0-21 to 0-30)

Procedure	Specification Numbers							
	0-1	0-3	0- 0-28	E-0-8	0-9 0-29	0-21	0-22	0-23
First Application of Oil:								
Grade of Oil	No. 1	Light tar	No. 3	emulsion	No. 3	No. 3	No. 3	No. 3
Gallons per square yard	.35	.25	.22	.35	.25	.35	.25	.20
First Application of Rock:								
Size of Rock	Sand	....	¾–⅛	¾–⅛	1–½	¾–⅛	¾–⅛	¾–⅛
Cubic yards per square yard	.003	....	.010	.010	.015	.015	.011	.008
Second Application of Oil:								
Grade of Oil	No. 3	Light tar	No. 3	emulsion	No. 3	....	....	....
Gallons per square yard	.35	.25	.23	.35	.25	....	....	....
Second Application of Rock:								
Size of rock	¾–⅛	¾–⅛	¾–⅛	¾–⅛	½–⅛	....	....	....
Cubic yards per square yard	.015	.005	.010	.010	.008 (.003) (sand)	....	....	....
Total quantities per mile based or 18′ roadway:								
Total gallons No. 1	3700	....	....	....	....	....	....	....
Total gallons No. 3	3700	....	4750	....	5280	3700	2640	2120
Total gallons tar	....	5280	....	....	....	....	....	....
Total gallons emulsion	....	....	....	7380	....	....	....	....
Total C. Y. rock	190	53	212	212	295	158	116	85
Thickness oil mat	½″	⅛″	⅝″	⅝″	¾″	1-3″	¼″	¼″

Note: No. 1 oil, 50-60 per cent asphalt content. No. 3 oil, 95 per cent asphalt content.

While the results obtained from the use of oil in surface treatments have, on the whole, been very successful and have given a dustless and smooth hard surface resembling pavement, the public should not confuse the issue but should remember that while, as a form of maintenance for macadam roads, this type is very efficient, it is not to be considered a substitute for pavement. As the traffic further increases on the highways in question better and more expensive types of surface will be required. In certain places bituminous macadam can be used as an intermediate type between oiled macadam and the more expensive pavement. It is hoped that the use of bituminous oils will conserve the foundations of broken stone and gravel materials until reconstruction is required and funds are available.

In this manner the oiled macadam and the heavier type of the bituminous macadam are steps in the stage construction of a highway, by means of which an attempt is made to give the public with the funds which are available a type of construction free from dust and conformable in cost to the traffic that the road carries.

ROAD MIX TREATMENTS

Specification M-1—1½" compacted oil mat using No. 2 oil (60-70 per cent asphalt content).

Specification M-2—2" compacted oil mat using No. 2 oil (60-70 per cent asphalt content).

Specification M-3—2½" compacted oil mat using No. 2 oil (60-70 per cent asphalt content).

Formula for determining oil content:

$$P = K\ (.02A + .045B + .18C) + D$$

P equals per cent of oil by weight.
K equals product derived by dividing the average specific gravity or 2.6 by the specific gravity of material being mixed.
A equals per cent of aggregate retained on No. 10 sieve.
B equals per cent of aggregate passing No. 10 sieve and retained on 200 mesh sieve.
C equals per cent of aggregate passing No. 200 sieve.
D equals absorption as determined by Laboratory.

The relation between the total costs of the maintenance of oiled macadam and untreated macadam on the Oregon State Highway System was explained quite carefully on pages 83, 84, 85 and 86 of the Eighth Biennial Report, wherein it was shown that the saving in yearly maintenance costs over the entire oiled system amounted to 13 per cent as compared with the maintenance cost on the same sections before this type of treatment was applied. This comparison took into consideration the cost of the maintenance of the unoiled surface, the yearly loss in thickness of the macadam due to the wear on the stone of the untreated surface, the original oiling cost and the reoiling and routine maintenance costs involved in keeping the oiled surface in a smooth and easy-riding condition.

During the past biennium progress has been made in improving the specification for oiling gravel and broken stone roads and in the design of stronger foundations and better drainage.

Many times very cheap foundations can be constructed by using run-of-bank gravel or talus covered with three or four inches of water-bound macadam, topped with a wearing surface consisting of an oiled surface treatment or a bituminous macadam. As pointed out in the

Eighth Biennial Report the heavy asphaltic oil surface treatments when applied on firm foundations that are properly drained will stand remarkably well. Those sections to which reference was made two years ago are still in excellent condition and have required very little care or maintenance expense. Long stretches of the Old Oregon Trail between Arlington and Pendleton fall in this category, as does also the oiled macadam between Heppner and Heppner Junction and between Arlington and Fossil and on the Redwood Highway in Southern Oregon.

The first oil treating of macadams attempted by the State of Oregon was tried on the seven-mile section of the Old Oregon Trail immediately west of Pendleton. That section of oil-treated macadam is now seven years old. It was retreated each year for the first four years with a small amount of light fuel oil, the cost of the retreating averaging about $200 per mile per year. The fifth year it was treated with a spread of heavy asphaltic oil. This section has required practically no attention since that time, and the appearances indicate that it will be many years before a retreatment is required. The maintenance cost of this section has been reduced 40 per cent below the amount required to maintain this same section in the untreated condition eight years ago in spite of the fact that during this interval of time the traffic has increased nearly 300 per cent.

UNIT COSTS OF OILING—1929

Specification Number	Miles Oiled	Cost Per Mile (18-foot Roadway)		Cost Per Square Yard	
		Rock Cost Excluded	Rock Cost Included	Rock Cost Excluded	Rock Cost Included
0–1	49	$1,130	$1,557	$.1070	$.1474
0–3	7	650	650	.0615	.0615
0–8	113	1,082	1,532	.1024	.145
EO–8	28	1,097	1,431	.1038	.1355
0–9	16	1,296	1,667	.1227	.1578
M–1	4	856	901	.0816	.0853
M–2	10	1,254	1,254	.1187	.1187
Average cost	227	$1,101	$1,491	$.1043	$.1412

Average cost including base macadam:

Average cost per mile of 18′ roadway of oil surface treatment, including rock	$1,491
Average cost per mile of 18′ roadway of 6″ compacted macadam base	5,500
Total average cost of oiled macadam	$6,991

UNIT COST OF RE-OILING—1929

Specification Number	Miles Oiled	Cost Per Mile (18-foot Roadway)		Cost Per Square Yard	
		Rock Cost Excluded	Rock Cost Included	Rock Cost Excluded	Rock Cost Included
0–21	30	$ 665	$ 905	$.0629	$.0857
0–22	259	645	860	.0610	.0814
0–23	140	520	675	.0492	.0639
0–28	21	1,324	1,697	.1253	.1607
M–1	31	1,265	1,265	.1197	.1197
Average cost	481	$ 679	$ 871	$.0642	$.0824

The average costs of the surface treatments are given in a table included herewith, which table is self-explanatory. Attention is called to the average cost of the macadam base on which the surface treatment is placed. It is manifestly impossible to place the surface treatment without a base, and the cost of the base should be considered in determining the total cost of the construction of an oiled macadam. As the average cost of oil-treated macadam (including the macadam base) is only $7,000 per mile, that type of surfacing is financially practicable even on highways carrying very light traffic.

BITUMINOUS PAVEMENT REPAIR WORK

The major repairs to asphaltic concrete pavements, Portland cement concrete pavements, bituminous macadam wearing surfaces and oiled macadams are performed by means of small portable repair plants operated by special paving repair crews. By these plants and their auxiliary equipment all spots of broken pavement are repaired, settlements and depressions caused by heavy truck traffic are built up, and the "wrinkles" and other irregularities are removed. In general, the repairs made by the paving repair plants leave the pavements stronger than they were at the time of original construction. In reality, the work that they perform is not only a maintenance but a betterment feature, and if continued from year to year will keep the pavements in good condition almost indefinitely.

By this means the progressive deterioration caused by the impact of heavy trucks over rough pavement can be retarded. Oregon is one of the few states to carry on such a program and the continued use of such equipment will eliminate the necessity for pavement reconstruction unless caused by relocation of alignment or revision of grade. In other words, in many states the pavements are allowed to get rougher as times go on until resurfaced by a major reconstruction operation which is not charged to maintenance. In certain instances, the widening of pavements, the addition of more super-elevation on curves or the placing of increased thickness on large sections are properly charged to the betterment account.

The State Highway Department has developed small dual-drum mixers mounted on trailers and equipped with kerosene burners for use in drying the stone and mixing the mineral aggregate and asphaltic binder. During 1930, experiments were made with the use of cut-back asphalts in these small plants and present indications point to a probable saving in cost by the use of this type of asphaltic binder, which use eliminates the major portion of the heating expense.

During the past biennium, one large plant and four small plants were used continuously through the summer season. A second large plant was used part time. The purchase of small five-ton gas rollers has proven to be economical due to the saving in the charge for tending the steam rollers with coal and water. During 1929, the cost of operating the paving repair plants amounted to $320,029.86. This cost included the mixing and placing of 32,052 tons of bituminous materials at an average cost of $9.32 per ton, and the heating and reshaping of 105,641 square yards of pavement at an average cost of $0.1864 per square yard. The unit cost and quantities of work performed by the paving plants during 1929 are as follows:

SUMMARY OF PAVING PLANT OPERATIONS—1929

Kind of Work	Cost	Tons	Cost Per Ton
Patching pavement (blacktop and concrete)	$173,508.81	16,806.79	$ 10.32
Patching oiled macadam and bituminous macadam	74,165.54	9,407.0	7.88
Betterment work on asphalt pavement and bituminous macadam	42,643.04	4,820.7	8.85
Totals	$290,317.39	31,034.49	$ 9.35

	Cost	Sq. Yds.	Cost Per Sq. Yd.
Heating and reshaping asphalt pavement	$ 19,692.28	105,641	$0.1864

Due to the fact that costs are available for only nine months of 1930, the unit costs of the 1930 operation of the pavement repair plants cannot be given. The quantities of work performed by the plants during the 1930 season were, however, as follows:

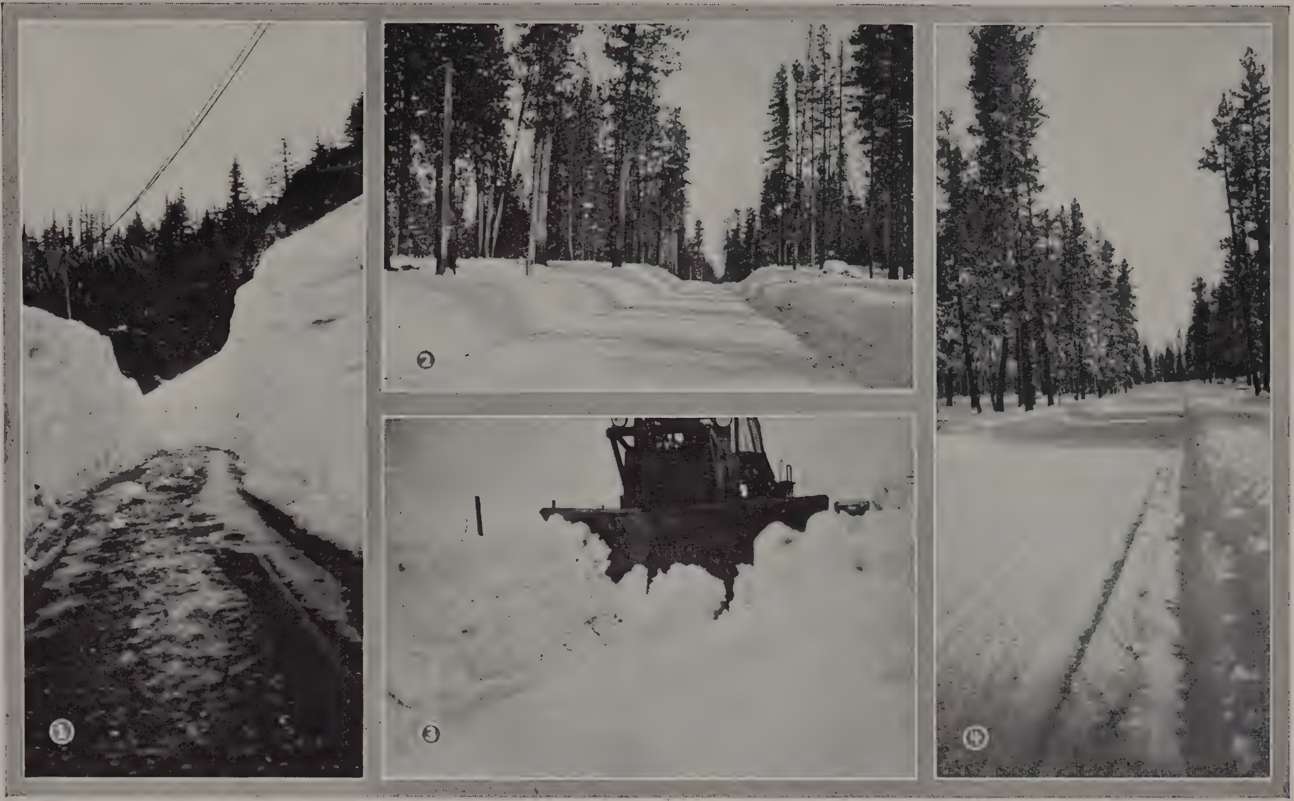
Total tons of hot bituminous mixture placed	39,497.57
Total square yards of asphalt pavement heated and reshaped	107,580

SNOW REMOVAL

In recognition of the huge investment by the public in highway transport and the dependence of many people upon the highways as a means of transportation, the Highway Commission has for many years kept the main highways throughout the state free from snow during the winter months. The commerce of the state, the business and social life of the community ebbs and flows through the great arterial highways that tie the people closer together and in a much more intimate way than any other form of transportation that has yet been devised. Hence, the snow blockade of a single highway becomes a more serious matter than merely the inconvenience caused. The merchants in the small towns do not carry large stocks of goods as in former years but purchase from the city wholesaler in small lots with frequent deliveries. Consequently, the snow-blockaded road may cause a serious food shortage where the railroad does not also serve the community or in the event that the railroad should be blockaded by the same storm.

The investment in highway construction and highway transportation is enormous, representing many millions of dollars, the valuation of which is greatly depreciated unless clear means of communcation are maintained throughout the year. The motor stage lines radiating from the more populous centers now penetrate to each small hamlet and the public has grown accustomed to depend upon their service, which cannot be continued unless the highways are maintained free of snow.

Necessarily, the removal of snow must be guided by the cost of such removal in proportion to the traffic served. Each road is a problem in



SNOW REMOVAL SCENES: 1—AN UNUSUAL CONDITION ON A SECTION OF THE COLUMBIA RIVER HIGHWAY WHERE SNOW IS SELDOM ENCOUNTERED; 2—THE OLD OREGON TRAIL BETWEEN PENDLETON AND LA GRANDE: 3—A V-TYPE PLOW IN OPERATION; 4—ON THE DALLES-CALIFORNIA HIGHWAY IN KLAMATH COUNTY

itself. The wind-swept McKenzie Pass in the high Cascades is an example of a condition that is hard to cope with. Storm clouds form quickly in such high mountainous country and in a short time blizzards sweep around the flanks of the icy peaks with bewildering speed. As the storm gains in intensity the wind moves the hard snow pellets into packed drifts, halting all motor traffic. Snow plows are hard pressed to keep their lines of communication open for the necessary fuel and supplies and must necessarily at time allow the high passes to temporarily block. It is almost impossible for the men to work during the height of such storms, and the severe strain often results in a breakdown of the equipment. Motorists caught on the lonely mountain passes through the wild and uninhabited country are in grave danger, especially women and children. Such severe storms often last for days, and snowfalls of 60 inches in 40 hours have been recorded.

Unless long sections of snow sheds are built and frequent travelers aid stations are maintained, passes such as are here referred to cannot be kept open without danger to the public. This condition does not apply to the passes through the timbered country and located at some distance from the high peaks, as for instance, the Green Springs Mountain and Siskiyou Mountain passes in Southern Oregon and the various passes in the Blue Mountains in Eastern Oregon.

The first essential in snow removal is drift control by the erection of a properly placed snow fence. The snow fence does not prevent the formation of drifts but it does control their location, forcing the snow to pile up some distance from the roadway rather than on the roadway. Where the adjacent fields are not cultivated, and especially in pasture and timber lands through the mountains, permanent snow fences can be erected, but many times the fields adjacent to the highways are cultivated and it becomes necessary to use a movable type of snow fence which can be set up after the fall plowing and planting and removed early in the spring. In many places it would be nearly impossible to keep the highways free from snow without the use of snow fence.

During the past two years the tendency throughout the nation has been toward the use of fast pneumatic-tired trucks equipped with mold-board push plows for removing light snow up to about two feet in depth and the use of mobile truck rotary plows for greater depths. In the majority of cases, by the continued use of the mold-board truck plows throughout the duration of the storm the snow can be removed in successive layers at a depth of not to exceed one foot at a time. Gradually during this operation a huge windrow is built up at the edge of the roadway. The snow is pushed out on the shoulder as far as possible for each successive removal so that two-way traffic can be maintained. The huge windrow of snow can later be removed by rotary plows. Under certain conditions, due to the sudden shifting of the wind, huge drifts are formed which are too large for the small high-speed mold-board plows to remove, making it necessary to call upon the large rotary truck plows.

Experience with rotary snow plows in this state has indicated the desirability of the blower type, preferably mounted on trucks with separate power units. The blower type rotary will throw the snow upward if necessary at a very acute angle, while the high velocity carries the snow a considerable distance. In this manner, deep thorough cuts and drifts can be cleared in a very effective manner. During the past two years progress has been made in securing adequate snow-removal equipment. Faster trucks have been assigned to the work making it possible to cover more territory with each piece of equipment, and warm storage spaces have been provided in the equipment sheds, making it possible to start the trucks for the attack on the storm with greater promptness.

During the winter of 1929-1930 the following equipment was employed in snow removal operations:

Truck rotary plows, large blower type	6
Truck rotary plows, small lateral type	5
Tractor rotary plows, large lateral type	3
Truck mold-board plows, large size	50
Truck mold-board plows, small size	14
Tractor mold-board plows	7
Motor grader mold-board plows	10
	95

During the winter of 1929-1930 Western Oregon experienced a snow storm such as occurs but once or twice in a decade and as a result considerable snow removal was necessary on highways that ordinarily have but little or no snow fall. Light mold-board truck plows have since been purchased for installation on the small trucks used in paving repair work throughout Western Oregon so that in the future the Highway Department will be in better position to cope with storms in that part of the state. The snowplows are quite inexpensive while the trucks are already on the ground. In consequence, a small layout of money is sufficient to provide for these infrequent and unusual storms. Ordinarily, in Western Oregon the only extensive snow removal operations are in the Siskiyou Mountains and on the Mt. Hood Loop from Rhododendron to Swim. The Siskiyou Mountain section is on the main Pacific Highway connecting with California, and it is imperative that a clear artery of traffic be maintained at all times. The equipment stationed there consists of two heavy, fast mold-board truck plows. In addition, a rotary plow is stationed at Klamath Falls which can be used on this section if necessary.

Snow is cleared from the west side of the Mt. Hood Loop to permit winter sports near Government Camp. Thousands of people visit this winter playground on the slope of Oregon's great mountain. The snow is, in general, removed by mold-board truck plows agumented by a blower type rotary plow which is stationed at Government Camp. This rotary plow is also used to clear the Mt. Hood and Wapinitia Highways of snow in the spring.

No attempt was made to keep the Mt. Hood Loop and the McKenzie Pass open through the winter season. Both roads were kept open in the fall as long as the light trucks equipped with mold-board push plows could perform the work, and both roads were opened early in the spring by means of heavy equipment.

Through Central Oregon all of the state highway routes are kept open, including the Green Springs and The Dalles-California Highways. A large rotary plow is kept at Sand Creek Mountain on The Dalles-California Highway, one of the highest mountain passes on the State Highway System. There have been several winters when the accumulated snowfall through this pass was as much as twelve feet in depth, the highway being kept open continuously during this time. A large truck rotary plow is also stationed at Hood River and a tractor type rotary plow at Cascade Locks for the purpose of maintaining a clear artery of traffic through the Columbia River Gorge.

In Eastern Oregon the major snow removal operations are through the Blue Mountains between Pendleton and La Grande and through the high passes on the John Day Highway at Butte Creek Summit east of Fossil and at Austin Summit east of Prairie City. Truck rotary plows are stationed at La Grande, Baker and Meacham. A tractor type rotary is stationed at Austin. The cost of snow removal on the State Highway System during 1929 was $172,264. During 1930 the cost was $125,553.52.

MAGNETIC ROAD SWEEPER

As a means of relieving travelers on the highways of as much as possible of the annoyance and inconvenience caused by punctures, the State Highway Department is now at regular intervals sweeping its macadam surfaced roads with a magentic sweeper designed to pick up nails, tacks, wires and other iron and steel objects.

The magnetic sweeper is suspended from a one-ton truck. Current is furnished by 110-volt 30-ampere D. C. compound generator with a field rheostat, the generator being driven by a model A Ford motor. The motor and generator are mounted in the bed of the truck. A double throw switch is used in order to change the polarity of the current from time to time. The entire cost of the outfit including the truck was approximately $2,000. Two men are required to operate the machine and the average total daily expense is approximately $30, or 50 cents per mile traveled. It has been found that an operating speed of six miles per hour gives the best result. At a distance of three inches from the ground the magnet has a lifting power of approximately 200 pounds.

This equipment operates continuously over the Oregon Highways and has collected a surprising amount of metal objects, a large portion of which is of the character that would puncture pneumatic tires. During 1929, 13,870 pounds of metal were taken from the roadway by this means.

ERECTION AND MAINTENANCE OF SIGNS

The signing of the state highways has been stressed during the past biennium, both as to warning and direction signs, by the creation early in 1929 of a new branch of the Maintenance Department to handle, under central control, this work which was formerly done by the local engineers, the change being made for the sake of uniformity in methods of installation as well as in design of signs. The methods of installation and the types of signs are those adopted by the American Association of State Highway Officials, and are now in use in practically all states of the Union.

Control of traffic by signs at dangerous places must necessarily be uniform throughout the state so that the motorist traveling in unfamiliar territory can have a reasonable idea of what to expect from previous experience. Care also must be taken so that places of small degree of danger are not over-emphasized, as this leads to disregard of signs placed at points where extreme caution must be observed.

Accordingly, the highways first are logged carefully, taking into consideration the degree of curve, deflection angle between tangents, super-elevation of curves, distance between curves, vertical curves, sight distance at junctions, average driving speed of the highway and all physical characteristics of the highway which tend to create hazardous conditions. With this data at hand, the sign foremen, experienced in this work, install the necessary signs. One and one-half ton trucks have been found to be the most satisfactory equipment for the use of the sign crews. These trucks are equipped with screen-side bodies specially designed for the work. They are built with a false bottom to accommodate posts below a load of signs, sections in back of the cab for metal signs, and running board lockers for small tools, nails, hardware and paint.

The work of re-signing the entire state is now in progress. For the most part, the work has consisted of the placing of warning and caution signs, and at the close of the biennium the following highways have been re-signed in this manner:

Lower Columbia River Highway
Upper Columbia River Highway
Old Oregon Trail
Oregon-Washington Highway (Pendleton to Washington State Line)
The Dalles-California Highway
John Day Highway
Ochoco Highway
McKenzie Highway (Sisters to Redmond)
McKenzie-Bend Highway
Klamath Falls-Lakeview Highway (The Dalles-California junction to Dairy)
Green Springs Highway (Jenny Creek to Klamath Falls)
Dairy-Bonanza Highway
Crater Lake Highway (South Park Boundary to Old Ft. Klamath)
Roosevelt Coast Highway (Astoria to Hebo)
Tualatin Valley Highway
West Side Pacific Highway
Salem-Dallas Highway
Pacific Highway (Portland to Eugene)
Pacific Highway (Roseburg to California State Line)

In the erecting of direction signs, special attention has been given to proper signing of major highway junctions and routes through cities.

Considerable experimenting has been done with the painting of pavement markings at railroad crossings, using various traffic paints and lacquers. Several types of reflection-illuminated signs as well as self-illuminated types have also been tried out.

Much good has been accomplished by the placing of guard fences or "fog" posts on curves, high fills and other places where they serve to better define the limits of the highway at night and in foggy weather. This same purpose is also served by the painting of center lines on the pavement on curves and other places where necessary.

All signs of a standard type such as "Curve", "Slow", etc., are of embossed enameled steel and are purchased ready-made. All other signs are of wood and are made in the highway department shop at Salem. The latter are lettered by a stencil process which insures uniformity of appearance and reduces the cost.

The signing work is in charge of John Beakey, Traffic Engineer.

ORGANIZATION

On account of the diversified nature of the numerous activities involved in the construction, maintenance and operation of a system of state highways, the work of the Highway Department is best handled by an organization consisting of several sub-departments, each concentrating on a particular branch of the work and each organized to handle its branch of the work in the most efficient manner. The sub-departments referred to consist of the General Office, the Auditing Department, the Legal Department, the Office Engineering Department, the Bridge Department, the Maintenance Department, the Market Road Department, the Materials Department, the Equipment Department and the five divisional field organizations. The functions of these sub-departments are as follows:

General Office:

The General Office comprises the office of the State Highway Engineer and the office of the Chief Clerk. Through it are handled all dealings with the public, and from it are directed the operations of all of the other sub-departments. The functions of this office are largely executive in nature, but they include also such routine duties as are involved in the centralizing and coordinating of the business of the entire department; such duties for instance as the distributing of the incoming mail, the collecting and combining of the outgoing mail, express, telegrams, etc., the filing of correspondence, the filing of the original copies of contracts and agreements, the recording and filing of the minutes of the Highway Commission meetings, the interviewing of applicants for employment, and numerous duties of like nature. This office also attends to the issuance of permits for log hauling on state highways and permits for the occupancy of state highway rights-of-way by telephone, telegraph and power lines and by gas and water pipe lines. The chief clerk in the General Office is H. B. Glaisyer.

Auditing Department:

All bills against the commission are received by this department, which secures necessary approvals, checks them as to quantities, prices and amounts and later drawing vouchers to cover them. The vouchers are submitted to the State Highway Engineer and the State Highway Commission for approval and are then transmitted to the office of the Secretary of State for final audit and issuance of warrants to cover. The Auditing Department also draws vouchers for the monthly payments to contractors and handles payroll payments and emergency items through checks drawn on the $75,000 revolving fund.

All freight and transportation matters are handled by the traffic manager connected with the Auditing Department, who also acts as bookkeeper for the commission, receiving and depositing all receipts and keeping the revolving fund bank record.

During the period from December 1, 1928, to September 30, 1930, a total of 22,834 state vouchers and 131 county vouchers have been issued, many of the vouchers covering from two to twenty or more invoices. During the same period a total of 48,230 bank checks were drawn on the revolving fund. Carl F. Smith has served as auditor and Roy V. Hollenberg as traffic manager and bookkeeper.

Legal Department:

The duties of the Legal Department consist of the procurement of rights-of-way, gravel pits and rock quarries required for the construction of highways when counties fail to procure same; the preparation of special contracts and agreements; the settlement of disputes and claims for damages; the defense of the Highway Commission in cases of litigation; and other duties of like nature.

This department is headed by J. M. Devers, attorney for the State Highway Commission. J. W. DeSouza is acting as assistant attorney.

Office Engineering Department:

In the Office Engineering Department are handled those office details of an engineering nature which pertain to surveys, grading, rock and gravel surfacing, and paving. The more important of the duties of this office are the working up of plans and specifications for projects to be contracted; the checking of monthly and final estimates upon which payments under contracts are based; the handling of details in connection with federal cooperation on federal aid projects; the filing of engineering records; the keeping of the cost and expenditure segregation records, and the compilation of reports, statistics and other data.

Working in conjunction with and as a part of the Office Engineering Department is the drafting office, the blue-printing room and the cost-keeping office. In the drafting room the necessary maps, profiles and other drawings are prepared from data obtained by the field forces. In the blue-printing room are prepared the blue prints that are required in connection with the advertising for bids and for the direction of contractors and field employes. In the cost-keeping office is kept a complete and detailed segregation of all expenditures made under the supervision of the Highway Commission.

The work of the Office Engineering Department is in charge of S. H. Probert, office engineer, with L. E. Parsons, J. W. Nash and D. G. DeSart as assistants, E. A. Skelley as chief draftsman, J. W. McCallister as engineer in charge of final estimate checking, and C. T. Hoover as cost accountant.

Bridge Department:

The Bridge Department handles all matters pertaining to bridges and similar structures. By this department the designs, plans and specifications for bridges are prepared; the bridge construction work supervised; the monthly and final estimates checked, and all other work pertaining to bridges taken care of.

This department consists of a general bridge office, a drafting office and a staff of field engineers and assistants. The work of the department during the past biennium is fully outlined in a preceding article devoted to bridges.

The Bridge Department is in charge of C. B. McCullough, bridge engineer, assisted by G. S. Paxson, assistant bridge engineer; O. A. Chase, chief designer, and W. A. Reeves, office engineer.

Maintenance Department:

The function of the Maintenance Department is to supervise and coordinate the handling of highway maintenance operations in the several divisions into which the state is divided for the handling of construction and maintenance work. The immediate direction of maintenance operations is handled by the division organizations hereinafter described; but the allotment of maintenance funds, the allotment of equipment and all matters involved in the coordinating and standardizing of the many details involved in the maintenance work are controlled by the Maintenance Department. Among the more important of the details referred to is the organization and direction of the road-oiling crews and the pavement-repair crews, which crews are moved from one division to another at frequent intervals and must, therefore, be controlled by a central authority.

The Maintenance Department is in charge of R. H. Baldock, assistant state highway engineer, assisted by E. I. Hansen, field man in charge of paving repair plants; Watson Townsend, office assistant, and W. H. Ney, clerk. A discussion of some of the more important features of the maintenance work performed during the past two years and of the expenditures in connection therewith appears in another part of this report.

Market Road Department:

By the Market Road Department are handled all of the details involved in the performance of those duties which are conferred upon the State Highway Commission by the so-called Market Road Act. These duties involve the apportionment of the State Market Road funds to the counties; the making of such investigations as are necessary to enable the Highway Commission to pass intelligently upon the plans for proposed market road work as submitted by the counties; the conferring with county officials in regard to market road work and the problems which arise from time to time in connection therewith, and the rendering to the counties of whatever assistance can be given to insure an economical and practical application of the market road funds.

The Market Road Department is in charge of J. H. Scott, market road engineer, who is assisted in the field by Oscar Cutler and in the office by Charles E. Low.

Materials Department:

The Materials Department has charge of the testing of all materials used in the construction and maintenance of highways and bridges, and of the making of such laboratory and field tests and examinations as are necessary to control those features of highway work which involve chemical or mechanical combinations.

For the testing of materials and mixtures, a well-equipped laboratory is maintained at Salem. All materials proposed for use are tested according to standard methods and passed upon by the engineer of materials. Results of bituminous and Portland cement mixtures are checked by testing daily samples from the field, and a complete record of tests is kept for each project. Special tests and investigations are conducted by the laboratory in order to determine what type of materials or mixtures is best suited for specific conditions.

In addition to doing the testing work in connection with state highway work and market road work, many tests of materials are made for other departments of the state, the United States Bureau of Public Roads, county road departments and municipalities.

Much laboratory work is involved in connection with the state's oiling program, and during the construction season an inspector is kept in Portland to sample all cars of road oil before shipment. An inspector is also kept at each of the three Oregon cement plants when substantial amounts of cement are being used on state construction. A sufficient supply of state-tested cement is kept on hand at each of the cement plants at all times to meet the needs of state work.

The Materials Department is in charge of N. M. Finkbiner, engineer of materials.

Equipment Department:

The Equipment Department has charge of the purchase and upkeep of the equipment required to maintain the state highways; it operates the equipment repair shops and warehouses; it purchases and distributes all engineering and office supplies, repair parts, accessories, etc., and it performs other work of an allied nature.

The organization of the Equipment Department and the exact nature of the functions which it performs are described in detail in that one of the following articles which is headed "Equipment Department." The department is in charge of L. P. Campbell, equipment engineer.

Divisional Field Organizations:

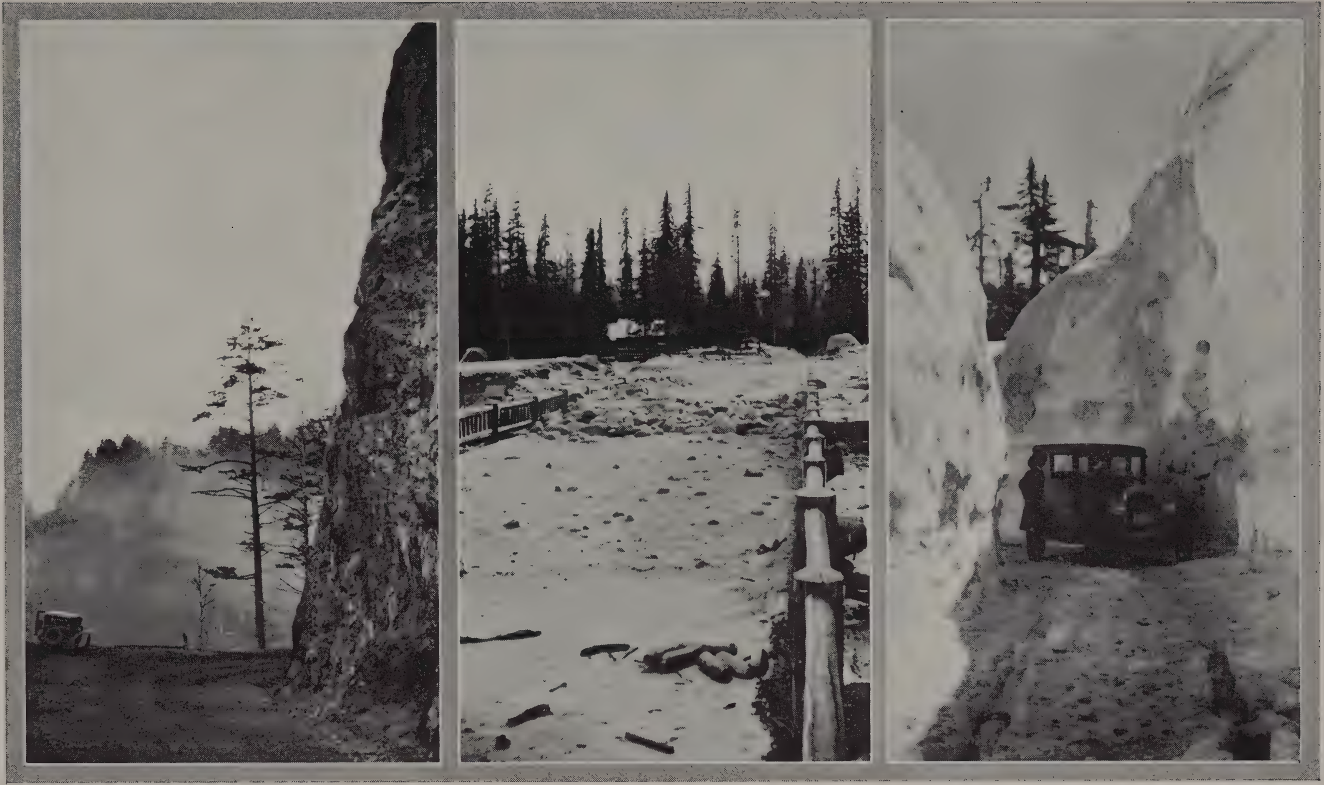
In the performance of the field duties incidental to the supervision and direction of the construction, maintenance and operation of state highways, the state highway engineer is assisted by five division engineers, each of whom has charge of the work in one of the five districts or divisions into which the state has been divided for the purpose.

Each division engineer supervises and directs all engineering work, construction work and maintenance work upon the state highways within his division and attends to all other matters having to do with highways in that territory. He acts as the local representative of the State Highway Department in dealings with contractors, with county officials with the public in general. He collects information for and makes recommendations to the state highway engineer in those matters calling for field information and intimate knowledge of local conditions.

Two of the division engineers have headquarters at Salem and have office space in the general offices of the department. The other three make their headquarters at points within their divisions, each maintaining a small office through which to handle correspondence and in which to keep such plans and records as are needed in connection with work under way. These outside division headquarters are located at Grants Pass, Bend and La Grande.

In the supervision of construction and maintenance work the division engineer is assisted by resident engineers, each of whom has direct supervision over one or more projects and/or the superintendence of the maintenance of the highways within certain territory. When highway location surveys are to be made in any division, a locating engineer is assigned to the division to perform that work under the supervision of the division engineer.

The duties of the resident engineer when in charge of construction work are to work out the details of the construction plans, adjusting them in the interest of economy and altering them to suit conditions



LEFT—HEAVY CONSTRUCTION WHERE THE ROOSEVELT COAST HIGHWAY ROUNDS CAPE PERPETUA IN LINCOLN COUNTY; CENTER—THE RESULT OF A FLOOD AT THE PLACE WHERE THE MT. HOOD HIGHWAY CROSSES WHITE RIVER; RIGHT—ON THE McKENZIE HIGHWAY AT THE SUMMIT OF THE CASCADE MOUNTAINS

encountered; to set stakes for the guidance of the workmen; to inspect workmanship and materials; to insure compliance with specifications; to measure the quantities of work for which the contractor is entitled to payment, and to otherwise look after and protect the interests of the state in all matters connected with work concerned.

The duties of resident engineers who are in charge of maintenance work are to direct the maintenance patrolmen and maintenance crews in the performance of their work; to see that proper materials and equipment are supplied; to keep account of expense incurred, and to, in all respects, look after the upkeep of the highways within their respective territories.

Division No. 1, in charge of Division Engineer W. D. Clarke, with headquarters at Salem, comprises the counties of Clatsop, Columbia, Clackamas, Washington, Yamhill and Tillamook and the northern parts of Lincoln, Polk and Marion Counties.

Division No. 2, in charge of Division Engineer E. A. Collier, with headquarters at Salem, comprises the southern parts of Marion, Polk and Lincoln Counties, all of Linn, Benton and Lane Counties and the northern part of Douglas County.

Division No. 3, in charge of Division Engineer W. E. Chandler, with headquarters at Grants Pass, comprises the southern part of Douglas County, all of Coos, Curry, Josephine and Jackson Counties and most of Klamath County.

Division No. 4, in charge of Division Engineer C. W. Wanzer, with headquarters at Bend, comprises the counties of Hood River, Wasco, Sherman, Gilliam, Jefferson, Deschutes, Crook, Wheeler and Lake, the western parts of Grant and Harney Counties and the northern part of Klamath County.

Division No. 5, in charge of Division Engineer H. G. Smith, with headquarters at La Grande, comprises the counties of Morrow, Umatilla, Wallowa, Union, Baker and Malheur and the eastern parts of Grant and Harney Counties.

EQUIPMENT DEPARTMENT

It is the primary function of the Equipment Department to procure, maintain and account for all equipment, supplies and materials used by the Highway Department except road building materials obtained through contracts made directly by the commission. This primary function subdivides itself into four sub-functions as follows: (a) the purchasing of equipment, supplies and materials; (b) the operation of repair shops for the repair and maintenance of mechanical equipment; (c) the operation of storehouses for the storing of materials and supplies that must be kept on hand for immediate use at all times; (d) the necessary accounting for the various functions enumerated and the keeping of service and operating records.

The headquarters' shops and warehouses are located at Salem, with branch plants at La Grande, Coquille and Klamath Falls. The administrative staff is located at the headquarters' plant where the authority delegated by the State Highway Engineer is centered, and the operations are so organized that each sub-functional activity is in charge of a competent head, who delegates down through the organization sufficient authority and responsibility so that the department, while widely scattered, operates satisfactorily as a unit.

The details of the departmental organization are the same as described in previous reports and should not need further description.

Elsewhere in this report will be found (a) a financial statement of this department; (b) a continuing statement showing the net expenditures through this department since its organization; (c) a recapitulation of the last inventory; (d) a statement showing the changes in equipment on hand during the biennium.

The Highway Department continues to assign its equipment to maintenance and other jobs on what is known as the rental basis. This scheme contemplates charging to each job its proportion of the original cost and the upkeep or maintenance of a piece of equipment during its useful life, plus a small percentage of administrative costs. For the charge so made, the equipment department holds as a charge against itself the original investment, maintains the equipment for natural wear and tear and provides adequate housing and care during its idle time. The charges for various pieces of equipment are published from time to time on two schedules; namely, schedule A for equipment on ordinary maintenance, and schedule B for equipment on minor and major betterment work done by extra gangs.

Supplies stocked in the various warehouses and furnished to various jobs and activities, and materials purchased for direct shipment to jobs are charged direct to the job immediately upon shipment.

As predicted in the last report, a considerably larger amount of surplus war trucks have been retired as obsolete during the last two years than heretofore during the equal periods of time. At the time of the writing of this report, practically the only surplus war equipment originally received from the Government that is still in operation is the standardized class B Liberty trucks and it is very doubtful if the next season will see more than half of these trucks, now carried as serviceable, in service on the highway work. These standardized class B trucks have been the heavy-duty trucks for the department for about ten years, but the cost of maintaining and operating them longer is out of proportion to the same costs for similar new and more modern equipment; and while new equipment to replace them will cost a considerable sum of money, the lower operating and maintenance costs of the new equipment, plus a nominal rate of interest on the investment, will be considerably less than the operating and maintenance costs on the old equipment should we continue to use it. Intensive study has been given to the available equipment on the market to replace the old government equipment that has been taken out of service; and as a result of this study during the biennium just passed, considerable replacement equipment, especially trucks for maintenance and snow removal, has been purchased. There yet remains to be purchased replacements for the standardized class B trucks as noted heretofore.

The principal activity along equipment lines the past biennium has been the constant endeavor to improve the mechanical service given by the shops and the design and construction of special equipment for special purposes. In all cases involving special equipment, the market was thoroughly canvassed and construction in state shops was resorted to only when the market did not afford what, in the opinion of the Highway Department, was needed to accomplish the desired result.

The principal pieces of special equipment designed and built by this department during the past biennium are as follows:

A—An improved road oil distributor.
B—A new type of rotary snow plow.
C—A new bituminous pavement patching outfit.
D—An improved road magnet.

A—The "C" Type road oilers mentioned in the last report have been redesigned and rebuilt with more precision in order to give the maintenance department a more accurate machine and allow them to lay their oil with closer control. Under the present specifications it is not possible to use the old slow, solid tired army type trucks any longer, which condition coupled with the need for closer control made it necessary to convert the oilers used two and three years ago into tender and tank service and to practically build new machines, using much of the old fittings and parts but completely rearranging them.

In designing the new distributors considerable study was made of types of truck equipment to mount them on, and after considering various types and makes, six-wheel FWD's were purchased. This selection was made for two reasons, first, because this truck made a very excellent mounting for the tanks with its wide range of speeds, and, second, because this type and size of truck was very much needed in snow-removal work in winter. In fact, the department would have hesitated to purchase these trucks if they were only a one-purpose truck. The operation of the "C" Type oiler described in the last report was practically reversed and a new type of nozzle was developed. In previous years, considerable nozzle trouble has been experienced resulting in uneven and streaky spreads, but the present type of nozzle has been very satisfactory and has given no trouble.

The main oil pump for the distributor is operated by a Ford industrial unit mounted at the rear of the truck, directly connected to the pump inside the oil tank and governed to operate at a constant speed. The ranges of oil distribution per square yard of road surface is obtained by varying the speeds of the truck. In order to accurately guage the speed of the truck, the use of the speedometer was abandoned and a tachometer with a range of from 1 to 1000 was installed to operate from the front wheel of the truck, and so connected that the range of from 1 to 1000 on the tachometer was taken from between approximately 4 miles an hour and 14 miles an hour. The spreads obtained with this machine have been very accurate and the mechanical error of distribution has been reduced to less than one per cent. The whole oiler unit is mounted on a sub-frame which in turn is mounted on the truck, making it very easy to demount when the oiling season is over and the truck is to be changed over to a snow-plow unit. It is only necessary to remove four clamps holding the sub-frame to the truck frame and to disconnect the air line to the water solution tank.

B—The new rotary snow plow that this department has been experimenting with for the last three years has been improved considerably during the past biennium. A redesigned plow embodying the original idea was built and operated last season with considerable success, and the department is now building the second one in a commercial shop for operation this coming season. The men responsible for this machine believe that it will handle more snow than any other unit of like size and power, with the additional advantage, that it is an auxiliary unit to a standard truck and consequently allows for the use of the truck, on which it is mounted during the winter, for other work during the summer when snow removal is not necessary.

C—Portable pavement patching plants have been used by the Highway Department for several years for the patching of bituminous pavements, and since the first one was designed and built considerable study and investigation has been made by various members of the department, resulting during the past year in the building of a light portable outfit which not only costs less to build and to operate, but turns out more tonnage than the original outfits. This is proved to such an extent that in all probability the original outfits, while still serviceable, will not be used in the future except in extreme emergencies. The underlying principle of this new piece of equipment is two drums similar to a nontilting mixer, the drums mounted side by side on an especially built low-frame trailer. On this same trailer is mounted the necessary gasoline motor for power, an air compressor and the burners used for heating the material. The method of operation is to put mineral aggregate in the drum, turn the burners into the drum to dry and heat the aggregate to the proper temperature, then remove the burners and add the proper amount of asphalt. This is allowed to mix thoroughly and when so mixed is dumped into wheelbarrows for distribution over the pavement as needed. The reason for two drums is that one drum is discharged and recharged while the other drum is heating and mixing materials.

D—In the preceding report, mention is made of a road magnet that was built by the department to sweep the highways of tramp iron and other puncture producing material that accumulates from traffic. Considerable study and experimenting with this unit has resulted in a number of important changes, especially in the design of the magnet itself, which have improved this equipment to such an extent that during the past season, it has been operated with but one interruption for repairs. That interruption was not caused by the failure of the magnet mechanism but rather by the necessity for work on the truck on which it is mounted. Information at hand in current engineering periodicals fails to show a better built or a better operating road magnet anywhere.

A reading of the articles on snow removal and snow-removal equipment written in the Biennial Report of 1927-1928 would be interesting in the light of the data submitted with this report, particularly in that it will show considerable progress in the development of the equipment and methods. This applied not only to snow removal but also to the oiling program and oiling equipment. This department takes pride in the fact that Oregon is considered by other states as one of the progressive states in snow removal and road oiling activities. The operating forces have had their demands for precision-built equipment anticipated and supplied by the equipment department, enabling them to make better records each year in their operations.

The storage facilities of the Equipment Department have been increased this biennium by the construction of additional storage sheds at Salem, Klamath Falls and Coquille. Also, the shop at Klamath Falls has been enlarged by a 48-foot addition. No other expansion of facilities has been made, but plans for a new shop building at Salem are in process of preparation.

It is with much satisfaction that it can be said that the personnel of the administrative staff of the equipment department is the same as given in the last biennial report, which is as follows: Emil F. Halik, master mechanic; Samuel B. Gillete, purchasing agent; Clifton B. Mudd, storekeeper; Emma A. Hinz, chief clerk; Hiram T. Smith, superintendent, La Grande Branch; Alpha B. McLeod, superintendent, Coquille Branch; Norval H. Jones, superintendent, Klamath Falls Branch.

Lewis P. Campbell, equipment engineer, has been in charge of the operation of the Equipment Department since April, 1922.

LEGAL DEPARTMENT

In connection with the carrying out of the state highway program there has grown or developed controversies resulting in some instances in litigation of both minor and major significance. Litigation, whether of minor or major importance, always demands, regardless of the amount involved, a careful application of the same principles of law and calls into operation the same court machinery. Where the activities of a public commission or body are the occasion for litigation the results are often beneficial rather than harmful, for court decision tends to clarify statutory defined responsibilities. Such has been the result in several instances with respect to litigation in which the state has been involved since the last report. The diversified activities in which the commission has been engaged have necessitated the preparation and/or examination by this department of many contracts. The aggregate number of such contracts which have been handled by this department during the past two years was 176.

A general summary of litigation in which the State Highway Commission has been interested during the past two years is perhaps all that is called for or will be expected in a report of this character.

During the period covered by this report the Highway Commission has participated in one way or another in 60 law suits. Some of those, as stated before, were of major importance and some of minor importance. One of the cases went to the United States Supreme Court, three were in the United States District Court, four in the Oregon State Supreme Court and fifty-two in the State Circuit Courts. The issues involved in some of these cases were, we believe, of sufficient importance to warrant special mention.

The case of Louis J. Tyson v. Hartley et al. was a case wherein the plaintiff challenged the authority of the State of Washington and the State of Oregon to take over the interstate bridge between Portland and Vancouver, and dispense with tolls and convert the bridge into a free bridge. This case ultimately reached the United States Supreme Court and was disposed of by the United States Supreme Court in favor of the public, and the two states were permitted to maintain and operate the bridge as a free bridge.

The case of United States v. State of Oregon was a case wherein the United States sought to recover from the State of Oregon damages for the loss of some timber growing on government land which was destroyed when a brush fire escaped from one of the state's contractors. The State of Oregon defended on the ground that no court but the United States Supreme Court had jurisdiction over the State of Oregon. This defense was held good and the state was relieved from further participation in the case. However, when the case was ultimately tried against the other defendants, the plaintiff government failed to recover.

The case of Guy C. H. Corliss v. H. B. Van Duzer was one of special importance because the effort and purpose of the case was to fasten personal liability on H. B. Van Duzer as chairman of the Highway Commission. A man traveling upon the highway had been killed, and it was claimed by Mr. Corliss, who prosecuted the case as administrator of the estate, that the state was negligent in that it had failed to properly warn the traveling public of obstructions in the roadway, necessitated in connection with some repair work that was at the time being done on the highway. Mr. Van Duzer was singled out and made the defendant because he was chairman of the Highway Commission, and the contention of the plaintiff was that he was guilty of malfeasance in office. The State Supreme Court held otherwise and held that under the circumstances the highway commissioners are not to be held responsible for such accidents, especially where they do not participate in any way in any of the circumstances immediately attending the accident.

The case of United Contracting Company and others v. the Highway Commission was one wherein the contractors challenged the correctness of the engineer's final estimate and asked that the court set aside the estimate and impose on the commission the court's estimate of the amount of money earned. The state defended on two grounds, namely, that the suit was one against the state, and, without the state's consent, could not be prosecuted, and then defended on the merits, claiming that the plaintiffs had not made out a cause against the state. The trial court held with the plaintiffs, and while it did not allow the amount claimed by the plaintiffs, it set aside the engineer's estimate and entered judgment for a different amount. The case was taken to the Supreme Court and that court held that the suit was one against the state, and, therefore, without its consent could not be prosecuted.

After the above case was instituted and before it had been decided the legislature made limited provision for suits against the state on highway contracts.

In its litigation the Highway Commission has fared well. With very few exceptions the decisions have been in favor of the commission and have been helpful in defining and interpreting the statutes under which the commission is working.

J. M. Devers, assistant attorney general and attorney for the Highway Commission, has handled the legal work for the state since 1918, and during the past two years he has been assisted by J. W. De Souza.

UPPER—OLD OREGON TRAIL TEN MILES WEST OF PENDLETON; CENTER—OTTER CREST AND THE PACIFIC OCEAN FROM THE ROOSEVELT COAST HIGHWAY IN LINCOLN COUNTY; LOWER—UMPQUA RIVER HIGHWAY BETWEEN SCOTTSBURG AND REEDSPORT

PART THREE

Financial Statements

Covering the Fiscal Period

December 1, 1928, to September 30, 1930

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TABLE I

STATE HIGHWAY FUND

December 1, 1928, to September 30, 1930

The below statement of receipts and disbursements under the State Highway Fund is arranged with the view of setting out particularly the net receipts and net disbursements of strictly State moneys as differentiated from Federal Government, county and railroad moneys disbursed through the State Highway Fund, and as differentiated from certain other moneys which are handled through the State Highway Fund as a matter of convenience but which do not affect the net income or net expenditure in connection with state highway work. The statement is intended chiefly as a reconciliation of the receipts and disbursements through the State Highway Fund with the receipts and disbursements in connection with state highway work as these are set out in tables which follow.

It should be noted that the receipts and expenditures of the funds of the Federal Government, the counties and other contributors, as shown in this statement, are partial only, being only the portions of such receipts and expenditures as are handled through the State Highway Fund. For complete statements of receipts and expenditures in connection with state highway work see Tables II, III and IV.

RECEIPTS

Net Income Items (state funds only):			
Balance on hand December 1, 1928:			
Cash (including $74,000 in Revolving Fund)	$ 725,103.82		
County warrants	44,164.55		
Total	$ 769,268.37		
Motor Vehicle License Fees	$11,077,469.61		
Gasoline and Distillate Tax	9,545.960.49		
Motor Transportation Fees	472,065.00		
Interest on Bank Balances	75,112.83		
Fines for Traffic Law Violation	40,489.15		
Total Net Income (state funds only)		$21,980,365.45	
Miscellaneous Receipts and Receipts of Cooperative Funds Handled Through the State Highway Fund:			
Federal Aid	$ 1,551,866.54		
County Cooperation	403,173.55		
Cooperation of Miscellaneous Contributors	15,348.63		
Cash Receipts from Sales, Rentals, Refunds and Miscellaneous	271,927.63		
Total of miscellaneous receipts and receipts of cooperative funds handled through the State Highway Fund		2,242,316.35	
Grand Total of Receipts in State Highway Fund			$24,222,681.80

DISBURSEMENTS

Net Disbursements (state funds only):				
New construction		$ 2,600,394.29		
Major Additions and Betterments		3,106,696.69		
Special Maintenance		593,483.48		
Cooperation in Forest Road Work		606,986.98		
Minor Additions and Betterments		749,979.12		
General Maintenance		4,420,104.49		
Operation of Draw Bridges and Ferries		99,899.18		
Rights of Ways, Patrol Station, Etc.		166,544.48		
Parks and Timber Preservations		69,529.86		
Enforcements of Traffic Laws		141,097.10		
Equipment and Supplies:				
Gross Disbursement	$3,044,057.74			
Credit from Sales and Rentals	2,758,710.68			
Net Disbursement		285,347.06		
Interest on Bonds		2,921,893.17		
Maturities on Bonds		3,750,000.00		
Administration and General Supervision		463,627.09		
Surveys		149,651.53		
Engineering County Work		3,225.39		
Miscellaneous General Expense		45,302.30		
Total Net Disbursement (state funds only)			$20,173,762.21	
Miscellaneous Disbursements and Disbursements of Cooperative Funds Handled Through the State Highway Fund:				
Federal Aid Funds		$ 1,551,866.54		
County Funds		403,173.55		
Funds of Miscellaneous Contributors		15,348.63		
Disbursements offset by credits accrued through sales, rentals, refunds and miscellaneous		271,927.63		
Total of miscellaneous and cooperative funds handled through the State Highway Fund			2,242,316.35	
Grand total of Disbursements through State Highway Fund				$22,416,278.56
Balance on hand September 30, 1930				*$ 1,806,603.24

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* This balance includes $15,000 in cooperative county warrants and $75,000 in the Revolving Fund.

TABLE II

SUMMARY OF NET INCOMES AND NET EXPENDITURES

December 1, 1928, to September 30, 1930

This table shows the grand totals of net incomes and net expenditures in connection with state highway work handled under the direct control of the State Highway Commission. It includes all county cooperation upon work directed by the Highway Commission, and all federal government cooperation upon federal aid projects. It does not include market road moneys, nor moneys of the Federal Government and counties expended on forest road projects.

It is to be noted that the amounts shown as "State Funds" correspond, not to the total receipts and disbursements in the State Highway Fund, but to the "Net Receipts" and "Net Disbursements" of the State funds as separately set out in the State Highway Fund statement which immediately precedes this table.

Funds	Net Incomes	Net Expenditures	Balance on Hand Oct. 1, 1930
State Funds	$*21,980,365.45	$ 20,173,762.21	$ 1,806,603.24
County Funds	717,959.13	717,959.13	
Federal Government Funds	1,551,866.54	1,551,866.54	
Funds of Miscellaneous Contributors	15,348.63	15,348.63	
Grand Totals	$*24,265,539.75	$ 22,458,936.51	$ 1,806,603.24

* Includes balance of $769,268.37 carried over from 1928.

For detailed statement of receipts see Table III.

For detailed statement of expenditures see Table IV.

TABLE III

DETAILED SUMMARY OF INCOME

December 1, 1928, to September 30, 1930

Classification	Receipts Dec. 1, 1928, to Dec. 31, 1929	Receipts Jan. 1, 1930, to Sept. 30, 1930	Total Receipts Dec. 1, 1928, to Sept. 30, 1930
STATE FUNDS:			
Balance on hand December 1, 1928	$ 769,268.37	$	$ 769,268.37
Motor Vehicle License Fees	5,422,144.27	5,655,325.34	11,077,469.61
Gasoline and Distillate Tax	5,036,055.17	4,509,905.32	9,545,960.49
Motor Transportation Fees	126,109.06	345,955.94	472,065.00
Interest on Bank Balances	49,021.98	26,090.85	75,112.83
Fines for Traffic Law Violation	25,143.10	15,346.05	40,489.15
Sub-totals of State Funds	$ 11,427,741.95	$ 10,552,623.50	$ 21,980,365.45
COUNTY FUNDS:			
Cash remitted to State in payment of agreed cooperation	$ 314,623.53	$ 88,550.02	$ 403,173.55
Cooperative construction paid for directly by counties	218,283.62	96,501.96	314,785.58
Sub-totals of County Funds	$ 532,907.15	$ 185,051.98	$ 717,959.13
FEDERAL GOVERNMENT FUNDS:			
Cash remitted to State in payment of agreed cooperation	$ 624,415.28	$ 927,451.26	$ 1,551.866.54
Sub-totals of Federal Funds	$ 624,415.28	$ 927,451.26	$ 1,551,866.54
FUNDS OF MISCELLANEOUS CONTRIBUTORS:			
Cash remitted to State in payment of agreed cooperation	$ 9,969.29	$ 5,379.34	$ 15,348.63
Sub-totals of Miscellaneous Funds	$ 9,969.29	$ 5,379.34	$ 15,348.63
Grand Total Income from all Sources	$*12,595,033.67	$ 11,670,506.08	$*24,265,539.75

* Includes balance of $769,268.37 carried over from 1928.

TABLE IV

SUMMARY OF EXPENDITURES

December 1, 1928, to September 30, 1930

Classification	Table to Be Referred to for Details	Total Amount Expended	Cooperation in Expenditures				Engineering and Administration (Included in preceding columns)
			By State	By Counties	By Federal Government	By Miscellaneous Contributors	
New Construction	IX	$ 4,410,632.35	$ 2,600,394.29	$ 717,959.13	$1,077,193.24	$ 15,085.69	$ 260,610.42
Major Additions and Betterments	X	3,581,632.93	3,106,696.69	....	474,673.30	262.94	180,906.04
Special Maintenance	XI	593,483.48	593,483.48	....	....	....	25,619.53
Cooperation in Forest Road Work	XII	606,986.98	606,986.98	....	....	....	....
Minor Additions and Betterments	XIII-XV	749,979.12	749,979.12	....	....	....	....
General Maintenance	XIV-XVI	4,420,104.49	4,420,104.49	....	....	....	230,452.76
Operation of Draw Bridges and Ferries	XVII	99,899.18	99,899.18	....	....	....	....
Rights of Way, Patrol Stations, etc.	XX	166,544.48	166,544.48	....	....	....	2,743.10
Parks and Timber Preservations	XIX	69,529.86	69,529.86	....	....	....	2,854.69
Enforcement of Traffic Laws	XXIII	141,097.10	141,097.10	....	....	....	....
Equipment and Supplies (holding account)	XVIII	285,347.06	285,347.06	....	....	....	....
Interest on Bonds	XXIII	2,921,893.17	2,921,893.17	....	....	....	....
Maturities on Bonds	XXIII	3,750,000.00	3,750,000.00	....	....	....	....
Administration and Supervision	XXIII	463,627.09	463,627.09	....	....	....	463,627.09
Surveys	XXI	149,651.53	149,651.53	....	....	....	149,651.53
Engineering County Work	XXII	3,225.39	3,225.39	....	....	....	3,225.39
Miscellaneous General Expense	XXIII	45,302.30	45,302.30	....	....	....	....
Totals		$22,458,936.51	$20,173,762.21	$ 717,959.13	$1,551,866.54	$ 15,348.63	$1,319,690.55

TABLE V

EXPENDITURES FOR CONSTRUCTION WORK SUMMARIZED BY COUNTIES

December 1, 1928, to September 30, 1930

The amounts given in this table include such expenditures for new construction work, major and minor betterment work, surveys, and engineering of county work as are directly chargeable to particular counties. They include, also, state expenditures in connection with forest road work. They do not include expenditures for maintenance work or for general purposes such as interest and maturities on bonds and administration and general supervision. For summary of construction expenditures by highways and for other details, see the tables which follow.

County	Total Amount Expended	Cooperation in Expenditures			
		By State	By County	By Federal Government	By Miscellaneous Contributors
Baker	$ 333,832.01	$ 308,435.74	$ 2,424.74	$ 22,971.53	$
Benton	38,162.84	37,174.71	988.13		
Clackamas	547,802.25	516,643.62		31,158.63	
Clatsop	214,802.32	158,566.34		56,235.98	
Columbia	102,067.41	102,067.41			
Coos	314,534.70	291,011.76		23,522.94	
Crook	2,891.44	2,891.44			
Curry	313,404.70	247,948.90	5,600.00	59,855.80	
Deschutes	234,413.78	136,954.45	11,330.50	86,128.83	
Douglas	548,132.68	145,851.71	211,234.18	191,046.79	
Gilliam	8,283.09	8,283.09			
Grant	133,182.55	124,056.03		9,126.52	
Harney	293,893.12	221,906.92	18,279.65	53,706.55	
Hood River	30,227.30	30,227.30			
Jackson	384,146.60	271,799.43		112,347.17	
Jefferson	19,295.20	19,295.20			
Josephine	174,899.33	107,282.93	10,000.00	57,616.40	
Klamath	798,050.16	756,254.96	9,403.96	32,391.24	
Lake	272,864.88	189,660.54	6,767.07	76,437.27	
Lane	1,153,929.12	885,080.57	156,129.91	112,718.64	
Lincoln	561,027.14	409,450.35	5,000.00	146,576.79	
Linn	217,652.91	107,742.54	94,561.74		15,348.63
Malheur	491,932.38	447,004.18		44,928.20	
Marion	38,617.74	38,617.74			
Morrow	8,279.73	7,584.59	695.14		
Multnomah	75,502.23	75,502.23			
Polk	116,247.41	92,500.64	12,641.65	11,105.12	
Sherman	169,926.07	143,427.63		26,498.44	
Tillamook	270,435.30	81,803.79	122,350.75	66,280.76	
Umatilla	325,906.75	296,139.74	8,581.18	21,185.83	
Union	339,241.54	222,629.63		116,611.91	
Wallowa	11,842.03	8,615.78	3,226.25		
Wasco	321,943.57	223,005.45	38,744.28	60,193.84	
Washington	268,443.98	268,443.98			
Wheeler	308,767.38	186,419.43		122,347.95	
Yamhill	57,526.66	46,653.25		10,873.41	
Totals	$ 9,502,108.30	$ 7,216,934.00	$717,959.13	$1,551,866.54	$15,348.63
Expenditures for Maintenance Work	5,113,487.15	5,113,487.15			
Expenditures for General purposes	7,843,341.06	7,843,341.06			
Grand totals	$22,458,936.51	$20,173,762.21	$717,959.13	$1,551,866.54	$15,348.63

TABLE VI

EXPENDITURES FOR MAINTENANCE WORK SUMMARIZED BY COUNTIES

December 1, 1928, to September 30, 1930

The amounts given in this table include all expenditures for general maintenance, special maintenance and operation and maintenance of draw bridges and ferries. For summary of maintenance expenditures by highways and for other details, see the tables which follow.

County	Expended Dec. 1, 1928, to Dec. 31, 1929	Expended Jan. 1, 1930, to Sept. 30, 1930	Total Expended Dec. 1, 1928, to Sept. 30, 1930
Baker	$ 94,916.92	$ 62,114.30	$ 157,031.22
Benton	124,674.06	66,480.80	191,154.86
Clackamas	64,874.60	41,111.70	105,986.30
Clatsop	48,923.69	25,347.67	74,271.36
Columbia	27,239.00	11,286.44	38,525.44
Coos	261,645.34	88,826.92	350,472.26
Crook	27,537.37	22,699.76	50,237.13
Curry	100,266.76	112,470.26	212,737.02
Deschutes	86,433.92	55,049.44	141,483.36
Douglas	133,814.58	65,114.50	198,929.08
Gilliam	60,122.15	26,761.86	86,884.01
Grant	52,229.51	32,799.66	85,029.17
Harney	10,282.00	10,952.68	21,234.68
Hood River	96,990.22	42,299.81	139,290.03
Jackson	161,587.90	49,805.41	211,393.31
Jefferson	25,488.24	16,528.52	42,016.76
Josephine	52,608.79	31,831.00	84,439.79
Klamath	299,151.48	115,487.62	414,639.10
Lake	35,327.07	49,882.82	85,209.89
Lane	160,909.33	134,214.26	295,123.59
Lincoln	109,816.83	58,591.02	168,407.85
Linn	30,303.62	31,631.83	61,935.45
Malheur	51,790.86	52,151.83	103,942.69
Marion	18,822.62	22,709.92	41,532.54
Morrow	40,096.75	27,773.35	67,870.10
Multnomah	7,665.73	48,589.56	56,255.29
Polk	34,316.67	16,279.48	50,596.15
Sherman	48,778.94	23,442.27	72,221.21
Tillamook	130,112.23	58,487.24	188,599.47
Umatilla	221,646.91	97,351.61	318,998.52
Union	131,138.08	86,196.41	217,334.49
Wallowa	86,877.63	20,898.97	107,776.60
Wasco	109,857.16	62,540.18	172,397.34
Washington	11,914.40	8,247.41	20,161.81
Wheeler	41,004.01	27,026.19	68,030.20
Yamhill	48,774.89	26,560.46	75,335.35
Undistributed expenses	141,629.91	194,373.82	336,003.73
Totals (State Funds)	$ 3,189,570.17	$ 1,923,916.98	$ 5,113,487.15

TABLE VII

EXPENDITURES FOR CONSTRUCTION WORK SUMMARIZED BY HIGHWAYS

December 1, 1928, to September 30, 1930

The amounts given in this table include such expenditures for new construction work, major and minor betterment work, surveys and engineering of county work as are directly chargeable to the particular highways. They include, also, state expenditures in connection with forest highway work. They do not include expenditures for maintenance work or the expenditures of the federal government and counties in connection with forest highway construction work.

Hwy. No.	Highway	Total Amount Expended	Cooperation in Expenditures			
			By State	By County	By Federal Government	By Miscellaneous Contributors
1	Pacific	$ 743,822.44	$ 679,156.06	$ 10,000.00	$ 54,403.44	$ 262.94
2	Columbia River	492,062.94	450,537.22		41,525.72	
3	West Side Pacific	126,944.02	115,838.90		11,105.12	
4	The Dalles-California	426,560.17	318,791.55	47,574.78	60,193.84	
5	John Day	72,758.04	51,560.04		21,198.00	
6	Old Oregon Trail	863,123.84	692,283.40		170,840.44	
7	Central Oregon	871,388.94	718,734.02	18,279.65	134,375.27	
8	Oregon-Washington	51,528.42	50,833.28	695.14		
9	Roosevelt Coast	1,768,485.53	1,189,951.75	186,516.75	392,017.03	
10	Wallowa Lake	20,623.80	17,397.55	3,226.25		
11	Enterprise-Flora					
12	Baker-Cornucopia	7,983.41	7,983.41			
13	Baker-Unity	19,700.43	17,275.69	2,424.74		
14	Crooked River	1,562.49	1,562.49			
15	McKenzie	378,264.64	154,686.07	110,859.93	112,718.64	
16	Santiam	231,761.63	122,114.20	94,561.74		15,085.69
17	McKenzie-Bend	668.70	668.70			
18	Willamette	139,355.77	120,664.18	18,691.59		
19	Fremont	273,406.09	152,461.23	15,230.84	105,714.02	
20	Klamath Falls-Lakeview	310,314.25	306,874.06	3,440.19		
21	Green Springs	325,094.07	245,069.84		80,024.23	
22	Crater Lake	83,232.47	83,232.47			
23	Dairy-Bonanza					
24	Burns-Crane					
25	Redwood	61,904.07	4,287.67		57,616.40	
26	Mt. Hood	232,965.76	213,880.66		19,085.10	
27	Alsea	52,941.44	46,953.31	5,988.13		
28	Pendleton-John Day	220,386.57	211,805.39	8,581.18		
29	Tualatin	211,327.18	211,327.18			
30	Salem-Dallas	24,595.63	24,595.63			
31	Albany-Corvallis	1,787.21	1,787.21			
32	McMinnville-Tillamook	79,761.37	68,887.96		10,873.41	
33	Corvallis-Newport	82,595.12	82,595.12			
34	Siuslaw	373,818.35	370,993.41	2,824.94		
35	Coos Bay-Roseburg	18,989.22	18,989.22			
36	Pendleton-Cold Springs	6,440.44	6,440.44			
37	Umatilla Cut-off	8,028.67	8,028.67			
38	Oregon Caves	37,354.05	37,354.05			
40	Bertha-Beaverton					
41	Ochoco	321,145.43	189,670.96		131,474.47	
42	Sherman	168,406.45	141,908.01		26,498.44	
43	Monmouth-Independence	2,246.97	2,246.97			
44	Wapinitia	3,475.17	3,475.17			
	Undistributed expense	385,297.11	74,030.86	189,063.28	122,202.97	
	Totals	$9,502,108.30	$7,216,934.00	$ 717,959.13	$1,551,866.54	$ 15,348.63

TABLE VIII

EXPENDITURES FOR MAINTENANCE WORK SUMMARIZED BY HIGHWAYS

December 1, 1928 to September 30, 1930

The amounts given in this table include all expenditures for general maintenance, special maintenance and operation and maintenance of draw bridges and ferries.

Hwy. No.	Highway Name	Expended Dec. 1, 1928, to Dec. 31, 1929	Expended Jan. 1, 1930, to Sept. 30, 1930	Total Expended Dec. 1, 1928, to Sept. 30, 1930
1	Pacific	$ 231,812.04	$ 141,643.06	$ 373,455.10
2	Columbia River	207,405.08	144,933.50	352,338.58
3	West Side Pacific	39,721.32	28,685.87	68,407.19
4	The Dalles-California	311,046.29	167,625.13	478,671.42
5	John Day	145,109.06	83,916.14	229,025.20
6	Old Oregon Trail	290,867.48	153,093.13	443,960.61
7	Central Oregon	13,181.14	15,920.16	29,101.30
8	Oregon-Washington	63,109.85	42,818.57	105,928.42
9	Roosevelt-Coast	451,422.77	261,992.86	713,415.63
10	Wallowa Lake	117,745.76	52,823.09	170,568.85
11	Enterprise-Flora	10,129.25	4,976.08	15,105.33
12	Baker-Cornucopia	17,988.44	13,678.24	31,666.68
13	Baker-Unity	17,765.74	12,022.96	29,788.70
14	Crooked River	3,414.48	4,419.78	7,834.26
15	McKenzie	67,526.19	58,699.42	126,225.61
16	Santiam	21,554.38	9,539.46	31,093.84
17	McKenzie-Bend	11,922.96	4,762.27	16,685.23
18	Willamette	6,245.00	2,485.13	8,730.13
19	Fremont	25,354.69	38,461.53	63,816.22
20	Klamath Falls-Lakeview	56,661.26	16,008.95	72,670.21
21	Green Springs	91,260.59	26,643.27	117,903.86
22	Crater Lake	82,217.97	23,578.45	105,796.42
23	Dairy-Bonanza	2,150.24	6,682.89	8,833.13
24	Burns-Crane	6,425.85	6,841.07	13,266.92
25	Redwood	21,461.14	9,499.83	30,960.97
26	Mount Hood	79,845.45	47,409.75	127,255.20
27	Alsea	54,034.17	52,653.43	106,687.60
28	Pendleton-John Day	8,523.82	5,048.48	13,572.30
29	Tualatin Valley	10,764.01	7,897.83	18,661.84
30	Salem-Dallas	9,445.85	15,978.06	25,423.91
31	Albany-Corvallis	1,844.94	1,382.28	3,227.22
32	McMinnville-Tillamook	72,041.86	33,811.56	105,853.42
33	Corvallis-Newport	125,251.69	35,530.95	160,782.64
34	Siuslaw	82,524.90	51,158.39	133,683.29
35	Coos Bay-Roseburg	174,311.70	65,596.37	239,908.07
36	Pendleton-Cold Springs	14,257.37	3,202.30	17,459.67
37	Umatilla Cut-off	....	....	....
38	Oregon Caves	5,680.33	8,611,84	14,292.17
40	Bertha-Beaverton	608.77	371.88	980.65
41	Ochoco	37,603.69	30,772.89	68,376.58
42	Sherman	45,114.43	22,057.43	67,171.86
43	Monmouth-Independence	528.27	711.82	1,240.09
44	Wapinitia	5,672.46	9,909.14	15,581.60
	Undistributed Expense	148,017.49	200,061.74	348,079.23
	Totals	$ 3,189,570.17	$ 1,923,916.98	$ 5,113,487.15

ER 30, 1930

tterments, Special Maintenance, and Forest Road Projects.

ON	GOVERNMENT COOPERATION			CONSTRUCTION ENGINEERING (Included in preceding columns)	
Total Expended by County to Date	Government Share of Cost	Expended by Government During 1929 and 1930	Total Expended by Government to Date	Cost During 1929 and 1930	Total Cost to Date
$ 34,608.02	$	$	$	$ 24.06	$ 2,978.67
.....	3,600.00	3,232.85	3,232.85	651.23	651.23
.....	4,885.77	4,885.77	4,885.77	864.09	864.09
14,156.56	.....	.....	.....	40.05	2,279.54
5,642.88	.....	.....	.....	.....	1,525.43
17,364.71	.....	.....	.....	.....	1,333.83
.....	125,159.46	.....	.....	1,679.44	1,679.44
.....	19,651.50	2,746.71	19,651.50	10.95	2,825.11
.....	16,616.62	13,664.01	13,664.01	1,875.83	1,875.83
.....	5,811.26	.....	.....	.....	.....
.....	9,826.03	8,282.46	8,282.46	2,059.55	2,059.55
.....	9,996.87	8,678.65	8,678.65	539.25	539.25
.....	19,922.35	11,408.18	11,408.18	1,171.63	1,171.63
.....	.....	.....	.....	410.88	410.88
.....	.....	.....	.....	120.49	120.49
.....	13,500.00	.....	.....	218.47	218.47
.....	.....	.....	.....	2,036.97	2,036.97
.....	14,526.73	8,842.47	8,842.47	1,869.36	1,869.36
.....	.....	.....	.....	94.23	94.23
.....	33,432.61	.....	.....	1,107.27	1,107.27
11,401.37	31,292.42	20,415.23	31,292.42	719.35	5,716.23
64,411.09	130,533.95	20,929.48	130,533.95	.....	11,399.70
.....	.....	.....	.....	.....	.....
5,600.00	103,823.78	.....	103,823.78	.....	13,834.54
.....	.....	.....	.....	.....	2,080.79
.....	388,936.93	48,691.70	48,691.70	3,935.92	3,935.92
.....	33,800.72	.....	.....	1,554.62	1,554.62
.....	13,000.00	11,525.80	11,525.80	1,910.40	1,910.40
.....	39,371.17	29,086.75	29,086.75	4,671.13	4,671.13
.....	17,190.32	.....	.....	1,323.29	1,323.29
.....	2,965.72	2,673.17	2,673.17	625.42	625.42
9,712.66	.....	.....	.....	.....	978.84
8,545.00	30,836.63	29,276.75	29,276.75	5,447.12	5,447.12
27,214.16	61,891.77	.....	.....	107.22	107.22
.....	5,680.27	5,680.27	5,680.27	.....	390.31
8,323.00	.....	.....	.....	255.90	255.90
26,000.00	50,490.00	9,920.93	50,490.00	.....	4,303.54
32,814.72	36,490.95	11,519.61	36,490.95	.....	2,494.76
3,500.00	5,988.33	5,988.33	5,988.33	.....	577.67
72,000.00	109,338.60	57,663.19	57,663.19	9,047.90	9,047.90
7,891.83	12,561.59	.....	.....	1,430.17	1,430.17
.....	59,183.59	.....	.....	5,221.26	5,221.26
44,000.00	64,934.51	.....	.....	4,879.32	4,879.32
6,500.00	12,472.14	1,530.20	12,472.14	.....	1,416.65
46,992.64	67,943.88	57,973.20	57,973.20	3,899.68	7,093.78
.....	8,332.09	.....	.....	137.50	137.50
5,000.00	7,641.75	6,566.58	6,566.58	1,108.97	1,108.97
10,000.00	15,129.01	.....	.....	773.36	773.36
.....	.....	.....	.....	502.31	502.31
.....	.....	.....	.....	7,291.78	7,291.78

TABLE VIII

EXPENDITURES FOR MAINTENANCE WORK SUMMARIZED BY HIGHWAYS

December 1, 1928 to September 30, 1930

The amounts given in this table include all expenditures for general maintenance, special maintenance and operation and maintenance of draw bridges and ferries.

Hwy. No.	Highway Name	Expended Dec. 1, 1928, to Dec. 31, 1929	Expended Jan. 1, 1930, to Sept. 30, 1930	Total Expended Dec. 1, 1928, to Sept. 30, 1930
1	Pacific	$ 231,812.04	$ 141,643.06	$ 373,455.10
2	Columbia River	207,405.08	144,933.50	352,338.58
3	West Side Pacific	39,721.32	28,685.87	68,407.19
4	The Dalles-California	311,046.29	167,625.13	478,671.42
5	John Day	145,109.06	83,916.14	229,025.20
6	Old Oregon Trail	290,867.48	153,093.13	443,960.61
7	Central Oregon	13,181.14	15,920.16	29,101.30
8	Oregon-Washington	63,109.85	42,818.57	105,928.42
9	Roosevelt-Coast	451,422.77	261,992.86	713,415.63
10	Wallowa Lake	117,745.76	52,823.09	170,568.85
11	Enterprise-Flora	10,129.25	4,976.08	15,105.33
12	Baker-Cornucopia	17,988.44	13,678.24	31,666.68
13	Baker-Unity	17,765.74	12,022.96	29,788.70
14	Crooked River	3,414.48	4,419.78	7,834.26
15	McKenzie	67,526.19	58,699.42	126,225.61
16	Santiam	21,554.38	9,539.46	31,093.84
17	McKenzie-Bend	11,922.96	4,762.27	16,685.23
18	Willamette	6,245.00	2,485.13	8,730.13
19	Fremont	25,354.69	38,461.53	63,816.22
20	Klamath Falls-Lakeview	56,661.26	16,008.95	72,670.21
21	Green Springs	91,260.59	26,643.27	117,903.86
22	Crater Lake	82,217.97	23,578.45	105,796.42
23	Dairy-Bonanza	2,150.24	6,682.89	8,833.13
24	Burns-Crane	6,425.85	6,841.07	13,266.92
25	Redwood	21,461.14	9,499.83	30,960.97
26	Mount Hood	79,845.45	47,409.75	127,255.20
27	Alsea	54,034.17	52,653.43	106,687.60
28	Pendleton-John Day	8,523.82	5,048.48	13,572.30
29	Tualatin Valley	10,764.01	7,897.83	18,661.84
30	Salem-Dallas	9,445.85	15,978.06	25,423.91
31	Albany-Corvallis	1,844.94	1,382.28	3,227.22
32	McMinnville-Tillamook	72,041.86	33,811.56	105,853.42
33	Corvallis-Newport	125,251.69	35,530.95	160,782.64
34	Siuslaw	82,524.90	51,158.39	133,683.29
35	Coos Bay-Roseburg	174,311.70	65,596.37	239,908.07
36	Pendleton-Cold Springs	14,257.37	3,202.30	17,459.67
37	Umatilla Cut-off	....	....	....
38	Oregon Caves	5,680.33	8,611.84	14,292.17
40	Bertha-Beaverton	608.77	371.88	980.65
41	Ochoco	37,603.69	30,772.89	68,376.58
42	Sherman	45,114.43	22,057.43	67,171.86
43	Monmouth-Independence	528.27	711.82	1,240.09
44	Wapinitia	5,672.46	9,909.14	15,581.60
	Undistributed Expense	148,017.49	200,061.74	348,079.23
	Totals	$ 3,189,570.17	$ 1,923,916.98	$ 5,113,487.15

TABLE IX

EXPENDITURES FOR NEW CONSTRUCTION WORK—DECEMBER 1, 1928, to SEPTEMBER 30, 1930

In this table are listed the expenditures on all construction projects except those which come in the classes of Major Additions and Betterments, Special Maintenance, and Forest Road Projects. For expenditures upon those classes of work see Tables X, XI, and XII.

PROJECT	Length in Miles	Estimated Total Cost	Expended During 1929 and 1930	Total Expended to Date	STATE COOPERATION			COUNTY COOPERATION			GOVERNMENT COOPERATION			CONSTRUCTION ENGINEERING (Included in preceding columns)	
					State Share of Cost	Expended by State During 1929 and 1930	Total Expended by State to Date	County Share of Cost	Expended by County During 1929 and 1930	Total Expended by County to Date	Government Share of Cost	Expended by Government During 1929 and 1930	Total Expended by Government to Date	Cost During 1929 and 1930	Total Cost to Date
BAKER COUNTY															
Surfacing, Unity-Hereford	14.50	$ 72,339.57	$ 17,939.60	$ 72,339.57	$ 37,731.55	$ 15,514.86	$ 37,731.55	$ 34,608.02	$ 2,424.74	$ 34,608.02	$	$	$	$ 24.06	$ 2,978.67
Bridge over Alder Creek	....	5,997.96	5,997.96	5,997.96	2,397.96	2,765.11	2,765.11	....	....	....	3,600.00	3,232.85	3,232.85	651.23	651.23
BAKER AND UNION COUNTIES															
Bridge over North Powder River	....	8,376.58	8,376.58	8,376.58	3,490.81	3,490.81	3,490.81	....	....	....	4,885.77	4,885.77	4,885.77	864.09	864.09
BENTON COUNTY															
Surfacing, Alsea Mountain-Philomath	6.10	44,749.21	50.23	44,749.21	30,592.65	Cr. 937.90	30,592.65	14,156.56	988.13	14,156.56	....	....	....	40.05	2,279.54
Bridge over North Fork Alsea River	....	18,482.85	Cr. 21.79	18,482.85	12,839.97	Cr. 21.79	12,839.97	5,642.88	....	5,642.88	....	....	....	....	1,525.43
BENTON AND LINCOLN COUNTIES															
Surfacing, Missouri-Bend Section	8.17	51,905.06	....	51,905.06	34,540.35	Cr. 5,000.00	34,540.35	17,364.71	5,000.00	17,364.71	....	....	....	....	1,333.83
CLACKAMAS COUNTY															
Paving, Multnomah County Line-Sandy	6.80	210,000.00	45,042.52	45,042.52	84,840.54	45,042.52	45,042.52	....	....	....	125,159.46	....	....	1,679.44	1,679.44
Bridge over Parrot Creek	....	35,091.28	1,672.18	35,091.28	15,439.78	Cr. 1,074.53	15,439.78	....	....	....	19,651.50	2,746.71	19,651.50	10.95	2,825.11
Bridge over Salmon River east of Sandy	....	24,595.38	24,595.38	24,595.38	7,978.76	10,931.37	10,931.37	....	....	....	16,616.62	13,664.01	13,664.01	1,875.83	1,875.83
CLATSOP COUNTY															
Grading, Necanicum and Wahanna Creek Bridge Approaches	....	12,000.00	....	....	6,188.74	....	....	....	....	....	5,811.26	....	....	....	....
Bridge over Skipanon River	....	17,697.55	17,697.55	17,697.55	7,871.52	9,415.09	9,415.09	....	....	....	9,826.03	8,282.46	8,282.46	2,059.55	2,059.55
Bridge over Necanicum River	....	17,000.00	13,742.78	13,742.78	7,003.13	5,064.13	5,064.13	....	....	....	9,996.87	8,678.65	8,678.65	539.25	539.25
Bridge over Wahanna Creek	....	37,000.00	26,633.30	26,633.30	17,077.65	15,225.12	15,225.12	....	....	....	19,922.35	11,408.18	11,408.18	1,171.63	1,171.63
COLUMBIA COUNTY															
Bridge over Beaver Creek	....	4,530.87	4,530.87	4,530.87	4,530.87	4,530.87	4,530.87	....	....	....	....	....	....	410.88	410.88
COOS COUNTY															
Grading, Cunningham Creek Bridge Approaches	....	6,745.93	6,745.93	6,745.93	6,745.93	6,745.93	6,745.93	....	....	....	....	....	....	120.49	120.49
Lakeside Undercrossing, Grading and Structure (S. P. Co. cooperates $8,425.23; no payments to date.)	0.37	22,023.09	3,781.40	3,781.40	97.86	3,781.40	3,781.40	....	....	....	13,500.00	....	....	218.47	218.47
Bridges over Budd and Cunningham Creeks	....	16,915.78	16,915.78	16,915.78	16,915.78	16,915.78	16,915.78	....	....	....	....	....	....	2,036.97	2,036.97
Three Bridges, Bandon-Curry County Line	....	25,485.96	25,485.96	25,485.96	10,959.23	16,643.49	16,643.49	....	....	....	14,526.73	8,842.47	8,842.47	1,869.36	1,869.36
Purchase of Ferry Boat "Oregon"	....	21,508.36	21,508.36	21,508.36	21,508.36	21,508.36	21,508.36	....	....	....	....	....	....	94.23	94.23
Ferry Slip and Approaches at North Bend	....	76,000.00	57,351.00	57,351.00	42,567.39	57,351.00	57,351.00	....	....	....	33,432.61	....	....	1,107.27	1,107.27
COOS AND DOUGLAS COUNTIES															
Surfacing, Reedsport-Lakeside	11.32	110,695.06	23,768.77	110,695.06	68,001.27	Cr. 6,047.83	68,001.27	11,401.37	9,401.37	11,401.37	31,292.42	20,415.23	31,292.42	719.35	5,716.23
Grading, Winchester Bay-Lakeside	6.92	230,042.12	....	230,042.12	35,097.08	Cr. 34,929.48	35,097.08	64,411.09	14,000.00	64,411.09	130,533.95	20,929.48	130,533.95	....	11,399.70
CROOK COUNTY															
Grading, North and South Units, Bear Creek-Millican	9.27	25,000.00	32.37	32.37	25,000.00	32.37	32.37	....	....	....	....	....	....	....	....
CURRY COUNTY															
Grading, Unit 3, Burnt Hill-Chetco River	5.70	252,000.00	3,543.58	248,684.66	142,576.22	Cr. 2,056.42	139,260.88	5,600.00	5,600.00	5,600.00	103,823.78	....	103,823.78	....	13,834.54
Bridge over Hunter Creek	....	26,625.02	347.40	26,625.02	26,625.02	347.40	26,625.02	....	....	....	....	....	....	....	2,080.79
Bridge over Rogue River	....	653,000.00	172,775.83	172,775.83	264,063.07	124,084.13	124,084.13	....	....	....	388,936.93	48,691.70	48,691.70	3,935.92	3,935.92
DESCHUTES COUNTY															
Surfacing, Bend-Horse Ridge	18.00	90,000.00	42,660.35	42,660.35	56,199.28	42,660.35	42,660.35	....	....	....	33,800.72	....	....	1,554.62	1,554.62
Grading, Hampton-Lake County Line	14.13	21,590.49	21,590.49	21,590.49	8,590.49	10,064.69	10,064.69	....	....	....	13,000.00	11,525.80	11,525.80	1,910.40	1,910.40
Grading, Horse Ridge-Dry River	8.40	60,000.00	51,805.90	51,805.90	20,628.83	22,719.15	22,719.15	....	....	....	39,371.17	29,086.75	29,086.75	4,671.13	4,671.13
Grading, Dry River-Millican	6.80	30,000.00	22,481.36	22,481.36	12,809.68	22,481.36	22,481.36	....	....	....	17,190.32	....	....	1,323.29	1,323.29
Bridge over Central Oregon Canal	....	5,704.46	5,704.46	5,704.46	2,738.74	3,031.29	3,031.29	....	....	....	2,965.72	2,673.17	2,673.17	625.42	625.42
DESCHUTES AND JEFFERSON COUNTIES															
Surfacing, Crooked River Section	4.55	30,414.32	....	30,414.32	20,532.16	Cr. 8,830.50	20,701.66	9,882.16	8,830.50	9,712.66	....	....	....	....	978.84
DESCHUTES AND KLAMATH COUNTIES															
Grading, Lapine-West Forest Boundary	....	48,491.89	48,491.89	48,491.89	Cr. 1,789.74	10,670.14	10,670.14	19,445.00	8,545.00	8,545.00	30,836.63	29,276.75	29,276.75	5,447.12	5,447.12
DOUGLAS COUNTY															
Surfacing, Red Bridge-Drain	10.10	155,000.00	8,747.51	8,747.51	12,108.23	Cr. 18,466.65	Cr. 18,466.65	81,000.00	27,214.16	27,214.16	61,891.77	....	....	107.22	107.22
Surfacing, Reedsport Section	1.00	10,133.45	....	10,133.45	4,453.18	Cr. 5,680.27	4,453.18	....	....	....	5,680.27	5,680.27	5,680.27	....	390.31
Grading and Surfacing, "L" Street (Reedsport)	0.57	8,141.07	8,141.07	8,141.07	....	Cr. 181.93	Cr. 181.93	8,141.07	8,323.00	8,323.00	....	....	....	255.90	255.90
Grading, Reedsport-Winchester Bay	3.29	95,879.49	....	95,879.49	19,389.49	Cr. 9,920.93	19,389.49	26,000.00	....	26,000.00	50,490.00	9,920.93	50,490.00	....	4,303.54
Grading, Gardiner Summit Section	1.95	85,961.84	....	85,961.84	21,648.53	Cr. 22,930.79	16,656.17	27,822.36	11,411.18	32,814.72	36,490.95	11,519.61	36,490.95	....	2,494.76
Grading, Reedsport Section	1.06	9,677.34	....	9,677.34	189.01	Cr. 5,988.33	189.01	3,500.00	....	3,500.00	5,988.33	5,988.33	5,988.33	....	577.67
Grading, Red Bridge-Drain	10.10	180,000.00	149,695.85	149,695.85	Cr. 1,338.60	20,032.66	20,032.66	72,000.00	72,000.00	72,000.00	109,338.60	57,663.19	57,663.19	9,047.90	9,047.90
Grading, Scottsburg Bridge Approaches	0.86	20,453.42	20,453.42	20,453.42	....	12,561.59	12,561.59	7,891.83	7,891.83	7,891.83	12,561.59	....	....	1,430.17	1,430.17
Grading, Tahkenitch-Gardiner Summit	3.17	214,000.00	106,686.51	106,686.51	146,709.51	106,686.51	106,686.51	8,106.90	....	....	59,183.59	....	....	5,221.26	5,221.26
Grading, Scottsburg-Burchard Creek	4.43	116,000.00	41,196.43	41,196.43	65.49	Cr. 2,803.57	Cr. 2,803.57	51,000.00	44,000.00	44,000.00	64,934.51	....	....	4,879.32	4,879.32
Bridge over Schofield River	....	24,055.26	2,937.55	24,055.26	5,083.12	1,407.35	5,083.12	6,500.00	....	6,500.00	12,472.14	1,530.20	12,472.14	....	1,416.65
Bridge over Umpqua River at Scottsburg	....	114,936.52	99,849.63	114,936.52	....	39,883.79	9,970.68	46,992.64	1,992.64	46,992.64	67,943.88	57,973.20	57,973.20	3,899.68	7,093.78
Bridge over Myrtle Creek	....	14,000.00	9,316.14	9,316.14	5,667.91	9,316.14	9,316.14	....	....	....	8,332.09	....	....	137.50	137.50
Two Bridges, Red Bridge-Drain Section	....	12,710.87	12,710.87	12,710.87	69.12	1,144.29	1,144.29	5,000.00	5,000.00	5,000.00	7,641.75	6,566.58	6,566.58	1,108.97	1,108.97
Bridges over Wells, Golden and Burchard Creeks	....	24,000.00	21,507.97	21,507.97	Cr. 1,129.01	11,507.97	11,507.97	10,000.00	10,000.00	10,000.00	15,129.01	....	....	773.36	773.36
GRANT COUNTY															
Surfacing, Mountain Rest-Little Beech Creek	7.18	48,000.00	3,082.55	3,082.55	48,000.00	3,082.55	3,082.55	....	....	....	....	....	....	502.31	502.31
Grading, Mountain Rest-Little Beech Creek	7.18	99,231.37	99,231.37	99,231.37	99,231.37	99,231.37	99,231.37	....	....	....	....	....	....	7,291.78	7,291.78

TABLE IX—Continued

PROJECT	Length in Miles	Estimated Total Cost	Expended During 1929 and 1930	Total Expended to Date	STATE COOPERATION			COUNTY COOPERATION			GOVERNMENT COOPERATION			CONSTRUCTION ENGINEERING (Included in preceding columns)	
					State Share of Cost	Expended by State During 1929 and 1930	Total Expended by State to Date	County Share of Cost	Expended by County During 1929 and 1930	Total Expended by County to Date	Government Share of Cost	Expended by Government During 1929 and 1930	Total Expended by Government to Date	Cost During 1929 and 1930	Total Cost to Date
GRANT AND WHEELER COUNTIES															
Grading, Barnhouse Ranch-Picture Gorge	10.00	$ 215,000.00	$ 127,574.40	$ 127,574.40	$ 87,084.28	$ 69,406.60	$ 69,406.60	$	$	$	$ 127,915.72	$ 58,167.80	$ 58,167.80	$ 3,694.85	$ 3,694.85
HARNEY COUNTY															
Surfacing, Sage Hen Hill-Burns	13.10	100,387.49	100,387.49	100,387.49	30,792.80	42,275.81	42,275.81	15,000.00	15,000.00	15,000.00	54,594.69	43,111.68	43,111.68	7,565.03	7,565.03
Surfacing, Hines Mill-Burns	2.74	50,337.40	50,337.40	50,337.40	28,550.68	39,742.53	39,742.53				21,786.72	10,594.87	10,594.87	5,209.39	5,209.39
Grading, Buchanan-Nigger Flat	3.43	47,658.49	7,597.13	47,658.49	25,756.63	4,317.48	25,756.63	21,901.86	3,279.65	21,901.86				1,037.82	3,854.77
Grading, Lake County Line-Gap Ranch	11.52	57,875.89	57,875.89	57,875.89	38,159.77	57,875.89	57,875.89				19,716.12			4,479.94	4,479.94
Grading, Unit "B" Lake County Line-Gap Ranch	0.17	6,000.00	2,505.01	2,505.01	3,000.00	2,505.01	2,505.01				3,000.00			7.50	7.50
Grading, Gap Ranch-Silver Creek	10.11	37,000.00	23,841.32	23,841.32	14,304.41	23,841.32	23,841.32				22,695.59			1,185.58	1,185.58
Grading, Silver Creek-Sage Hen Hill	10.66	53,000.00	7,663.08	7,663.08	23,415.04	7,663.08	7,663.08				29,584.96			665.00	665.00
Bridge over Silvies Creek		2,396.87	336.15	2,396.87	2,396.87	336.15	2,396.87								40.00
JOSEPHINE COUNTY															
Surfacing, Hayes Hill-Shattuck Corner	12.64	77,985.74		77,985.74	39,824.54	Cr. 24,948.07	39,824.54				38,161.20	24,948.07	38,161.20		4,352.73
Grading, Hayes Hill-Shattuck Corner	10.69	144,248.58	114.46	144,248.58	65,319.18	Cr. 2,409.78	65,319.18				78,929.40	2,524.24	78,929.40	114.46	12,408.06
Six Bridges on the Redwood Highway		24,906.01		24,906.01	10,187.34	Cr. 1,394.49	10,187.34				14,718.67	1,394.49	14,718.67		1,893.24
Bridge over Rogue River at Grants Pass		136,000.00	63,591.34	63,591.34	37,664.10	53,591.34	53,591.34	20,000.00	10,000.00	10,000.00	78,335.90			5,210.08	5,210.08
KLAMATH COUNTY															
Paving, Klamath Falls-Lakeview Junction	3.81	129,424.19	129,424.19	129,424.19	129,424.19	129,424.19	129,424.19							6,465.64	6,465.64
Paving, Altamont Canal Section	0.06	3,148.93	3,148.93	3,148.93	3,148.93	3,148.93	3,148.93							200.45	200.45
Surfacing, Beatty-Forest Boundary	21.36	174,815.88	94,942.88	174,815.88	174,815.88	94,942.88	174,815.88							4,440.14	7,734.28
Surfacing, Dairy-Bly Mountain	15.00	118,000.00	84,419.16	84,419.16	118,000.00	84,419.16	84,419.16							5,581.85	5,581.85
Grading, Bly-Forest Boundary	8.01	87,608.87	15,784.31	87,608.87	61,369.14	12,425.35	61,369.14	26,239.73	3,358.96	26,239.73				1,611.92	4,428.87
Grading, Dairy-Bly Mountain	8.49	65,493.58	65,493.58	65,493.58	65,493.58	65,493.58	65,493.58							7,154.30	7,154.30
Bridge over Altamont Canal		12,091.43	12,091.43	12,091.43	12,091.43	12,091.43	12,091.43							1,304.88	1,304.88
Bridge over Klamath River at Keno		57,000.00	35,069.51	35,069.51	22,985.71	26,494.91	26,494.91				34,014.29	8,574.60	8,574.60	1,118.04	1,118.04
LAKE COUNTY															
Surfacing, Lakeview Section		6,210.21		6,210.21	3,805.45	Cr. 684.36	3,805.45	2,404.76	684.36	2,404.76					616.74
Surfacing, Lakeview-California Line	15.29	107,000.00	95,181.82	95,181.82	69,999.45	79,089.62	79,089.62				37,000.55	16,092.20	16,092.20	5,507.71	5,507.71
Temporary surfacing, Ana Spring-Hunter Hill		5,649.81	5,649.81	5,649.81	5,649.81	5,649.81	5,649.81								
Grading, Ana Spring-Hunter Hill	11.02	47,460.96	33,321.14	47,460.96	21,402.18	10,684.14	21,402.18				26,058.78	22,637.00	26,058.78	3,102.88	4,796.75
Grading, Unit 3, Lakeview-California Line	5.98	27,713.36	27,713.36	27,713.36	8,536.62	10,067.75	10,067.75	6,082.71	6,082.71	6,082.71	13,094.03	11,562.90	11,562.90	2,987.27	2,987.27
Grading, Lake County Section (Central Oregon Highway)	14.38	47,582.81	47,582.81	47,582.81	20,716.90	47,582.81	47,582.81				26,865.91			3,701.79	3,701.79
Grading, East Forest Boundary-Silver Lake	19.77	70,000.00	54,198.39	54,198.39	29,535.00	28,053.22	28,053.22				40,465.00	26,145.17	26,145.17	3,686.44	3,686.44
Grading, Silver Lake-Picture Rock Pass	13.53	39,000.00			15,856.74						23,143.26				
LANE COUNTY															
Surfacing, Springfield-Cogswell Hill	7.40	70,000.00	55,807.64	55,807.64	8,304.12	18,856.41	18,856.41	26,000.00	18,690.41	18,690.41	35,695.88	18,260.82	18,260.82	2,804.44	2,804.44
Grading, Springfield Bridge Approaches	0.25	9,467.40	9,467.40	9,467.40	4,918.93	9,467.40	9,467.40				4,548.47			623.50	623.50
Grading, West Unit, Lowell-Goodman Creek	3.90	70,701.79	20,028.09	70,701.79	5,199.15	2,395.44	5,199.15	65,502.64	17,632.65	65,502.64				2,395.44	5,199.15
Grading, East Unit, Lowell-Goodman Creek	3.49	145,444.03	2,133.30	145,444.03	5,528.28	1,074.36	5,528.28	139,915.75	1,058.94	139,915.75				1,074.36	5,528.28
Grading, Black Canyon Section	3.31	159,000.00	94,083.81	94,083.81	159,000.00	94,083.81	94,083.81							5,301.09	5,301.09
Grading, Springfield-Cogswell Hill	7.40	67,767.08	67,767.08	67,767.08	4,520.24	11,739.88	11,739.88	23,279.88	23,279.88	23,279.88	39,966.96	32,747.32	32,747.32	5,081.17	5,081.17
Grading, Approaches to McKenzie River Bridge	0.83	9,008.30	9,008.30	9,008.30	3,555.22	3,555.22	3,555.22				5,453.08	5,453.08	5,453.08	479.99	479.99
Grading, Approaches to Gate Creek Bridge	0.63	9,066.67	9,066.67	9,066.67	1,223.37	1,223.37	1,223.37	3,922.34	3,922.34	3,922.34	3,920.96	3,920.96	3,920.96	515.12	515.12
Grading, Glenada Section	1.20	28,136.53	28,136.53	28,136.53	4,114.17	15,604.54	15,604.54	13,103.26	12,531.99	12,531.99	10,919.10			1,931.00	1,931.00
Grading, Glenada-Douglas County Line	6.36	117,000.00	59,079.83	59,079.83	26,092.38	52,086.62	52,086.62	21,000.00	6,993.21	6,993.21	69,907.62			4,070.49	4,070.49
Grading, Berry Creek-Sutton Lake	3.90	118,000.00	43,613.71	43,613.71	34,503.68	43,613.71	43,613.71	13,000.00			70,496.32			2,187.00	2,187.00
Grading, Hendricks Bridge-Doyle Hill	9.27	93,000.00	51,084.17	51,084.17	7,332.90	31,431.55	31,431.55	43,000.00	19,652.62	19,652.62	42,667.10			2,886.07	2,886.07
Bridge over Blue River		23,444.91	6,055.82	23,444.91	6,771.02	101.31	6,771.02	5,193.19	2,375.81	5,193.19	11,480.70	3,578.70	11,480.70	272.17	2,640.26
Bridge over Willamette River at Springfield		133,079.04	28,155.24	133,079.04	Cr. 12,703.54	Cr. 5,779.65	Cr. 9,056.87	65,000.00	22,283.38	65,000.00	80,782.58	11,651.51	77,135.91	765.81	6,181.56
Bridge over McKenzie River		44,325.65	44,325.65	44,325.65	7,929.51	7,929.51	7,929.51	10,207.03	10,207.03	10,207.03	26,189.11	26,189.11	26,189.11	3,271.33	3,271.33
Bridge over Gate Creek at Vida		18,885.91	18,885.91	18,885.91	3,926.45	3,926.45	3,926.45	4,042.32	4,042.32	4,042.32	10,917.14	10,917.14	10,917.14	2,415.63	2,415.63
Bridge over Indian Creek		12,955.59	12,955.59	12,955.59	2,472.37	10,130.65	10,130.65	2,824.94	2,824.94	2,824.94	7,658.28			1,655.82	1,655.82
Bridge over Deadwood Creek		33,073.20	84.00	33,073.20	25,392.86	84.00	25,392.86	7,680.34		7,680.34					2,226.10
Concrete approaches to Springfield Bridge		14,838.93	14,838.93	14,838.93	10,990.20	12,004.99	12,004.99	2,833.94	2,833.94	2,833.94	1,014.79			2,009.71	2,009.71
Bridge over Siltcoos River		28,000.00	8,418.12	8,418.12	4,438.09	6,378.41	6,378.41	6,500.00	2,039.71	2,039.71	17,061.91			235.90	235.90
Bridge over Sutton Creek		14,000.00	9,142.88	9,142.88	1,903.79	6,954.34	6,954.34	3,300.00	2,188.54	2,188.54	8,796.21			365.38	365.38
Bridge over Camas Swale		13,000.00	10,531.43	10,531.43	13,000.00	10,531.43	10,531.43							357.73	357.73
Bridge over Eugene Power Canal (City of Eugene cooperates $4,500; nothing paid to date.)		15,000.00	11,080.70	11,080.70	1,289.65	7,508.50	7,508.50	4,500.00	3,572.20	3,572.20	9,210.35			364.10	364.10
LINCOLN COUNTY															
Surfacing, Siletz Bay-Otter Rock	12.75	132,889.12		132,889.12	92,896.42	Cr. 39,992.70	92,896.42				39,992.70	39,992.70	39,992.70		5,862.64
Surfacing, Waldport-Lane County Line	13.27	184,000.00	10,507.83	10,507.83	131,571.51	10,507.83	10,507.83				52,428.49			347.71	347.71
Grading and surfacing, Eddyville-Toledo	17.20	182,079.95		182,079.95	125,263.07		141,263.07	56,816.88		40,816.88					3,796.99
Grading, Siletz Bay-Rocky Creek	8.97	169,574.54		169,574.54	61,971.44	160.32	61,971.44				107,603.10	Cr. 160.32	107,603.10		8,459.11
Grading, Waldport-Yachats	8.82	157,000.00	153,325.49	153,325.49	70,072.97	79,654.97	79,654.97				86,927.03	73,670.52	73,670.52	7,972.35	7,972.35
Grading, Yachats-Lane County Line	2.85	187,000.00	116,692.40	116,692.40	134,334.76	96,714.97	96,714.97				52,665.24	19,977.43	19,977.43	3,368.84	3,368.84
Grading, Yaquina Bay-South	1.00	19,646.90	19,646.90	19,646.90	19,646.90	19,646.90	19,646.90							1,056.08	1,056.08
Bridge over Depoe Bay		55,557.09		55,557.09	23,134.59	2,649.71	23,134.59				32,422.50	Cr. 2,649.71	32,422.50		3,187.63
Bridge over Rocky Creek		59,336.89	7,976.92	59,336.89	29,288.74	7,976.92	29,288.74				30,048.15		30,048.15		3,429.63
Bridge over Big Creek		13,734.00	13,734.00	13,734.00	5,575.09	6,468.60	6,468.60				8,158.91	7,265.40	7,265.40	1,066.48	1,066.48
Ferry slip and approach, north side Alsea Bay		10,000.00	8,797.77	8,797.77	10,000.00	8,797.77	8,797.77							548.82	548.82
LINN COUNTY															
Surfacing, Lebanon-Shea's Hill	17.24	125,059.37	116,784.77	125,059.37	69,317.19	68,612.65	69,317.19	55,742.18	48,172.12	55,742.18				6,917.09	7,435.63
Grading, Lebanon-Shea's Hill (O. E. Ry. Co. cooperates $38,983.75; paid $23,898.06 prior to 1929 and $15,085.69 during 1929-30.)	17.24	163,640.67	37,055.93	163,640.67	67,245.48	10,782.41	67,245.48	57,411.44	11,187.83	57,411.44				1,489.58	11,419.75
Grading, Ranger Station-Bryant Hill	1.87	62,000.00	37,870.05	37,870.05	5,000.00	2,668.26	2,668.26	57,000.00	35,201.79	35,201.79				2,668.26	2,668.26
Bridges over Dobbin, Wolf and Canyon Creeks		25,000.00			25,000.00										

TABLE IX—Continued

PROJECT	Length in Miles	Estimated Total Cost	Expended During 1929 and 1930	Total Expended to Date	STATE COOPERATION			COUNTY COOPERATION			GOVERNMENT COOPERATION			CONSTRUCTION ENGINEERING (Included in preceding columns)	
					State Share of Cost	Expended by State During 1929 and 1930	Total Expended by State to Date	County Share of Cost	Expended by County During 1929 and 1930	Total Expended by County to Date	Government Share of Cost	Expended by Government During 1929 and 1930	Total Expended by Government to Date	Cost During 1929 and 1930	Total Cost to Date
MALHEUR COUNTY															
Surfacing, Ironside-Cow Valley	16.60	$ 74,641.67	$	$ 74,641.67	$ 35,923.79	$ 1,166.10	$ 35,923.79	$	$	$	$ 38,717.88	Cr. $1,166.10	$ 38,717.88	$	$ 5,226.46
Surfacing, Cow Valley-Brogan	6.10	41,262.52		41,262.52	18,898.42	Cr. 22,364.10	18,898.42				22,364.10	22,364.10	22,364.10		2,489.30
Surfacing, Harper-Vale	15.30	127,000.00	122,833.85	122,833.85	127,000.00	122,833.85	122,833.85							7,867.31	7,867.31
Grading, Harper-Burrelle Ranch	15.53	107,586.13	107,586.13	107,586.13	107,586.13	107,586.13	107,586.13							5,888.02	5,888.02
Grading, R. R. Tunnel-Harper	13.31	178,000.00	36,823.52	36,823.52	178,000.00	36,823.52	36,823.52							4,800.54	4,800.54
Grading, Speery-R. R. Tunnel	6.01	89,000.00			89,000.00										
Malheur River Bridge		30,317.12	30,317.12	30,317.12	30,317.12	30,317.12	30,317.12							1,524.21	1,524.21
MORROW COUNTY															
Surfacing, Jones Hill-Lena	2.90	12,873.27	525.86	12,873.27	1,705.99	Cr. 169.28	1,705.99	11,167.28	695.14	11,167.28					1,258.34
Surfacing, Lena-Umatilla County Line	11.10	53,784.36	1,037.16	53,784.36	23,545.31	1,037.16	23,545.31	30,239.05		30,239.05					3,541.83
MULTNOMAH COUNTY															
Purchase of Interstate Bridge		50,670.24	50,670.24	50,670.24	50,670.24	50,670.24	50,670.24								
Traffic Barriers on Interstate Bridge		11,500.00	25.85	25.85	11,500.00	25.85	25.85							25.85	25.85
POLK COUNTY															
Grading and surfacing, Valley Junction Bridge approaches		15,481.63	602.07	15,481.63	15,481.63	602.07	15,481.63							6.84	949.90
Bridge over Luckiamute River		38,497.01	6,177.56	38,497.01	15,951.09	Cr. 4,927.56	15,951.09				22,545.92	11,105.12	22,545.92	186.09	2,488.07
Bridge over Ash Creek		2,810.58	400.90	2,810.58	2,810.58	400.90	2,810.58							27.06	153.38
Culvert West of Willamina		1,332.49	1,332.49	1,332.49	1,332.49	1,332.49	1,332.49							14.73	14.73
Surfacing, Tillamook County Line-Grande Ronde		37,000.00	23,615.55	23,615.55		10,973.90	10,973.90	14,227.40	12,641.65	12,641.65	22,772.60			1,500.15	1,500.15
Projects completed prior to 1927		926,738.35		926,738.35	589,356.33		695,819.36	168,987.66		62,524.63	168,394.36		168,394.36		53,710.74
TILLAMOOK COUNTY															
Surfacing, Garibaldi-Hobsonville	3.60	20,900.60		20,900.60	5,105.76	Cr. 9,794.84	5,105.76	6,000.00		6,000.00	9,794.84	9,794.84	9,794.84		1,027.75
Surfacing, Mohler-Garibaldi	2.70	162,634.19	42,293.69	162,634.19	124,739.09	39,198.59	159,539.09	34,800.00			3,095.10	3,095.10	3,095.10	1,552.03	6,257.86
Grading, Garibaldi-Hobsonville	3.23	98,661.56		98,661.56	5,701.10	1,039.54	15,701.10	34,000.00		34,000.00	48,960.46	Cr. 1,039.54	48,960.46		3,760.37
(S. P. Co. cooperates $10,000 ; nothing paid to date)															
Grading, Jetty Creek-Brighton	1.00	82,000.00	2,595.02	79,086.09	57,000.00	2,595.02	54,086.09	25,000.00		25,000.00				.34	3,169.89
Grading, Mohler-Wheeler	1.30	45,764.52	115.87	45,764.52	10,333.32	Cr. 5,183.81	10,333.32	13,651.20		13,651.20	21,780.00	5,299.68	21,780.00		1,897.82
Grading, Wheeler-Brighton	2.86	164,561.60	3,089.72	164,561.60	54,122.20	Cr. 65,599.55	54,122.20	58,000.00	58,000.00	58,000.00	52,439.40	10,689.27	52,439.40	12.00	5,218.96
Grading, Rockaway-Garibaldi	4.36	230,000.00	2,826.93	210,808.24	78,616.22	Cr. 74,125.66	65,073.71	70,000.00	64,350.75	64,350.75	81,383.78	12,601.84	81,383.78	158.19	10,856.77
Bridge over Miami River		22,622.04		22,622.04	1,972.44	Cr. 6,051.09	1,972.44	8,000.00		8,000.00	12,649.60	6,051.09	12,649.60		1,675.41
Bridge over Trask River		25,164.13	25,164.13	25,164.13	25,164.13	25,164.13	25,164.13							2,011.51	2,011.51
Bridge over Rockaway Creek		2,229.90	2,229.90	2,229.90	2,229.90	2,229.90	2,229.90							143.77	143.77
Bridges over Hoquarton, Dougherty and Hall Sloughs		45,000.00			19,354.67						25,645.33				
Bridges over Wilson River and Wilson Slough		51,000.00			22,019.94						28,980.06				
Juno Overcrossing north of Tillamook		21,000.00			345.94						12,254.06				
(S. P. Co. cooperates $8,400 ; nothing paid to date)															
UMATILLA COUNTY															
Surfacing, Morrow County Line-Vinson	4.00	16,825.53	425.18	16,825.53	16,825.53	425.18	16,825.53								1,299.68
Surfacing, Lazinka Ranch-Albee	11.66	85,000.00	82,613.09	82,613.09	85,000.00	82,613.09	82,613.09							5,625.20	5,625.20
Grading, South Unit, Lazinka Ranch-Albee	6.00	85,289.81	9,200.22	85,289.81	5,548.19	619.04	5,548.19	79,741.62	8,581.18	79,741.62				619.04	5,548.19
UNION COUNTY															
Bridge over Grande Ronde River		31,000.00	20,503.88	20,503.88	12,716.21	13,356.52	13,356.52				18,283.79	7,147.36	7,147.36	756.26	756.26
WALLOWA COUNTY															
Grading and surfacing, Lostine-Enterprise	7.89	116,797.60		116,797.60	Cr. 2,188.38	Cr. 3,226.25	12,658.91	55,075.40	3,226.25	40,228.11	63,910.58		63,910.58		6,320.29
Grading and surfacing, Unit 2, Enterprise-Forest Boundary	6.05	82,922.58		82,922.58	43,523.44		50,338.33	39,399.14		32,584.25					4,124.29
Bridges, Lostine-Enterprise Section		21,505.62		21,505.62	1,320.65		6,598.98	9,777.97		4,499.64	10,407.00		10,407.00		1,949.68
WASCO COUNTY															
Surfacing, Deschutes River bridge Approaches		954.10	Cr. 3,905.90	954.10	954.10	Cr. 3,905.90	954.10								
Grading, Wapinitia-Maupin Junction	7.40	41,000.00	11,027.97	11,027.97	16,482.96	11,027.97	11,027.97				24,517.04			758.89	758.89
Bridge over Deschutes River at Maupin		103,930.17	82,885.49	103,930.17	Cr. 3,495.20	Cr. 16,052.63	Cr. 3,495.20	47,231.53	38,744.28	47,231.53	60,193.84	60,193.84	60,193.84	2,412.49	6,465.79
WASHINGTON COUNTY															
Bridge over Fanno Creek		3,002.41	2,842.12	3,002.41	3,002.41	2,842.12	3,002.41								
WHEELER COUNTY															
Surfacing, Mitchell-Willow Creek	18.00	144,000.00	12,590.51	12,590.51	74,114.63	12,590.51	12,590.51				69,885.37			682.12	682.12
Grading, Mitchell-Keyes Creek Summit	7.48	88,525.50	19,869.25	88,525.50	24,246.43	11,668.04	38,558.45	15,000.00		5,000.00	49,279.07	8,201.21	44,967.05	1,145.02	9,314.76
Grading, Keyes Creek Summit-Fort Creek	8.02	62,930.29	62,930.29	62,930.29	33,070.41	41,103.65	41,103.65				29,859.88	21,826.64	21,826.64	4,913.63	4,913.63
Grading, Fort Creek-Barnhouse Ranch	6.95	135,000.00	79,312.82	79,312.82	54,468.47	40,079.50	40,079.50				80,531.53	39,233.32	39,233.32	4,843.25	4,843.25
Bridge over Bridge Creek		9,608.05	9,608.05	9,608.05	3,878.54	5,562.55	5,562.55				5,729.51	4,045.50	4,045.50	873.50	873.50
Bridge over Rock Creek		17,000.00	3,673.11	3,673.11	6,567.77	3,673.11	3,673.11				10,432.23			114.59	114.59
Totals		$12,104,225.05	$ 4,410,632.35	$ 9,326,920.73	$5,863,665.92	$2,600,394.29	$5,362,592.52	$2,036,170.03	$ 717,959.13	$1,663,410.75	$4,138,580.12	$1,077,193.24	$2,261,933.71	$ 260,610.42	$ 532,002.65

SUMMARY

Cooperating Parties	Estimated Cooperative Shares	Expended Prior to Dec. 1, 1928	Expended Dec. 1, 1928, to Sept. 30, 1930	Total Expended to Date	Estimated Cost to Complete
State	$ 5,863,665.92	$2,762,198.23	$2,600,394.29	$5,362,592.52	$ 501,073.40
Counties	2,036,170.03	945,451.62	717,959.13	1,663,410.75	372,759.28
Federal government	4,138,580.12	1,184,740.47	1,077,193.24	2,261,933.71	1,876,646.41
Miscellaneous contributors	65,808.98	23,898.06	15,085.69	38,983.75	26,825.23
Totals	$12,104,225.05	$4,916,288.38	$4,410,632.35	$9,326,920.73	$2,777,304.32

TABLE X

EXPENDITURES FOR MAJOR ADDITIONS AND MAJOR BETTERMENT WORK—DECEMBER 1, 1928, to SEPTEMBER 30, 1930

In this table are listed the expenditures made on those construction jobs which have to do with the improvement and betterment of sections of highway which have previously been constructed under the supervision of the State Highway Commission

PROJECT	Estimated Total Cost	Expended During 1929 and 1930	Total Expended to Date	STATE COOPERATION			COUNTY COOPERATION			GOVERNMENT COOPERATION			CONSTRUCTION ENGINEERING (Included in preceding columns)	
				State Share of Cost	Expended by State During 1929 and 1930	Total Expended by State to Date	County Share of Cost	Expended by County During 1929 and 1930	Total Expended by County to Date	Government Share of Cost	Expended by Government During 1929 and 1930	Total Expended by Government to Date	Cost During 1929 and 1930	Total Cost to Date
BAKER COUNTY														
Bituminous macadam, Baker-Pleasant Valley (contract)	$ 45,000.00	$ 34,887.07	$ 34,887.07	$ 20,100.00	$ 34,887.07	$ 34,887.07	$	$	$	$ 24,900.00	$	$	$ 1,059.03	$ 1,059.03
Bituminous macadam, Baker-Pleasant Valley (state force)	9,641.93	9,641.93	9,641.93	4,841.93	9,641.93	9,641.93	....	....	....	4,800.00	....	....	....	....
Betterment materials, Baker-Pleasant Valley	66,338.07	66,338.07	66,338.07	48,031.83	58,426.87	58,426.87	....	....	....	18,306.24	7,911.20	7,911.20	4,541.40	4,541.40
Widening, Baker-Pleasant Valley	17,608.37	17,608.37	17,608.37	17,608.37	17,608.37	17,608.37	....	....	....	....	....	....	....	....
Grading, Quartz Station Section	16,890.88	16,890.88	16,890.88	5,182.00	7,506.29	7,506.29	....	....	....	11,708.88	9,384.59	9,384.59	836.87	836.87
Drainage ditch, Haines-North	18,199.85	18,199.85	18,199.85	18,199.85	18,199.85	18,199.85	....	....	....	....	....	....	1,330.57	1,330.57
Regrading and resurfacing, Pleasant Valley-Durkee	185,000.00	126,244.72	126,244.72	90,550.36	126,244.72	126,244.72	....	....	....	94,449.64	....	....	9,524.38	9,524.38
Base oil, Pleasant Valley-Durkee	13,700.00	....	....	5,700.00	....	....	....	....	....	8,000.00	....	....	....	....
Regrading and surfacing, Haines-Baker	86,000.00	600.00	600.00	86,000.00	600.00	600.00	....	....	....	....	....	....	....	....
BENTON COUNTY														
Non-skid, Polk County Line-Corvallis	8,500.00	2,634.25	2,634.25	8,500.00	2,634.25	2,634.25	....	....	....	....	....	....	....	....
Non-skid, Corvallis-Lane County Line	12,400.00	....	....	12,400.00	....	....	....	....	....	....	....	....	....	....
Bituminous macadam, Missouri-Bend Section	18,400.00	6,879.39	6,879.39	18,400.00	6,879.39	6,879.39	....	....	....	....	....	....	....	....
Bituminous macadam, Alsea-West	10,100.00	44.25	44.25	10,100.00	44.25	44.25	....	....	....	....	....	....	....	....
Bituminous macadam, Blodgett-Gellatly Point	7,364.68	7,364.68	7,364.68	7,364.68	7,364.68	7,364.68	....	....	....	....	....	....	....	....
Betterment materials, Unit 3, Willamette Valley Project	7,400.00	4,229.30	4,229.30	7,400.00	4,229.30	4,229.30	....	....	....	....	....	....	301.63	301.63
Pile revetment near Corvallis	8,873.31	848.33	8,873.31	8,873.31	848.33	8,873.31	....	....	....	....	....	....	....	218.12
CLACKAMAS COUNTY														
Paving, Canemah-New Era	173,418.01	173,418.01	173,418.01	162,033.90	173,418.01	173,418.01	....	....	....	11,384.11	....	....	7,815.94	7,815.94
Bituminous macadam, Sandy-East	3,802.69	3,802.69	3,802.69	3,802.69	3,802.69	3,802.69	....	....	....	....	....	....	....	....
Bituminous macadam, Forest Boundary-Rhododendron	6,801.48	6,801.48	6,801.48	6,801.48	6,801.48	6,801.48	....	....	....	....	....	....	....	....
Resurfacing, Rhododendron-Government Camp	90,000.00	69,168.90	69,168.90	55,408.96	63,747.81	63,747.81	....	....	....	34,591.04	5,421.09	5,421.09	2,193.92	2,193.92
Regrading, Canemah-New Era	170,144.99	54,723.65	170,144.99	95,016.96	45,396.83	112,776.54	....	....	....	75,128.03	9,326.82	57,368.45	5,918.46	14,121.49
Grading, Multnomah County Line-Oswego	75,000.00	68,899.91	68,899.91	75,000.00	68,899.91	68,899.91	....	....	....	....	....	....	1,740.50	1,740.50
Tryon Creek Culvert at Oswego	10,618.10	10,618.10	10,618.10	10,618.10	10,618.10	10,618.10	....	....	....	....	....	....	272.12	272.12
Parapet wall, Multnomah County Line-Oswego	1,200.00	....	....	1,200.00	....	....	....	....	....	....	....	....	....	....
CLATSOP COUNTY														
Non-skid, Astoria-Seaside	15,000.00	4,935.34	4,935.34	15,000.00	4,935.34	4,935.34	....	....	....	....	....	....	....	....
Bituminous macadam, Cannon Beach-Hamlet Junction	20,891.99	20,891.99	20,891.99	20,891.99	20,891.99	20,891.99	....	....	....	....	....	....	....	....
Bituminous macadam, Hamlet Junction-Nehalem Summit	7,000.00	6,017.17	6,017.17	7,000.00	6,017.17	6,017.17	....	....	....	....	....	....	....	....
Betterment materials, Cannon Beach Junction-Nehalem Summit	21,000.00	19,814.37	19,814.37	21,000.00	19,814.37	19,814.37	....	....	....	....	....	....	518.77	518.77
Betterment materials, Miles Crossing-Cannon Beach Junction	20,000.00	12,109.98	12,109.98	20,000.00	12,109.98	12,109.98	....	....	....	....	....	....	214.90	214.90
Grading, Rock Creek-Big Noise Creek	25,964.99	25,964.99	25,964.99	15,827.68	15,827.68	15,827.68	....	....	....	10,137.31	10,137.31	10,137.31	1,857.62	1,857.62
Grading, Big Noise Creek-Gnat Creek	19,517.68	19,517.68	19,517.68	9,069.02	11,328.56	11,328.56	....	....	....	10,448.66	8,189.12	8,189.12	1,965.13	1,965.13
Culverts, Rock Creek and Big Noise Creek	10,152.11	....	10,152.11	5,480.15	Cr. 1,973.32	5,480.15	....	....	....	4,671.96	1,973.32	4,671.96	....	942.96
Bridges over Gnat and Ferris Creeks	23,239.23	23,239.23	23,239.23	14,063.11	15,672.29	15,672.29	....	....	....	9,176.12	7,566.94	7,566.94	2,161.52	2,161.52
COLUMBIA COUNTY														
Regrading, McNulty-Houlton	41,240.27	41,240.27	41,240.27	41,240.27	41,240.27	41,240.27	....	....	....	....	....	....	1,112.11	1,112.11
Moving buildings at Houlton	6,000.00	....	....	6,000.00	....	....	....	....	....	....	....	....	....	....
Bridge over Fall Creek	2,922.39	814.19	2,922.39	2,922.39	814.19	2,922.39	....	....	....	....	....	....	....	49.03
Widening Milton Creek Bridge	10,000.00	14.31	14.31	10,000.00	14.31	14.31	....	....	....	....	....	....	14.31	14.31
COOS COUNTY														
Bituminous macadam, Riverton-Bandon	26,400.00	9,496.12	9,496.12	17,976.00	9,496.12	9,496.12	....	....	....	8,424.00	....	....	....	....
Bituminous macadam, Bandon-South	13,200.00	....	....	3,857.20	....	....	....	....	....	9,342.80	....	....	....	....
Resurfacing, Riverton-Bandon-South	170,000.00	100,250.08	100,250.08	146,049.09	96,904.36	96,904.36	....	....	....	23,950.91	3,345.72	3,345.72	2,816.19	2,816.19
Grading, Haynes Slough, Larson Slough and Russell Point	37,000.00	20,140.11	20,140.11	14,978.67	20,140.11	20,140.11	....	....	....	22,021.33	....	....	634.98	634.98
Pile trestle over Haynes Slough	9,019.47	9,019.47	9,019.47	4,242.82	6,257.32	6,257.32	....	....	....	4,776.65	2,762.15	2,762.15	1,103.71	1,103.71
Bridge over Larson Slough	9,000.00	8,419.51	8,419.51	3,867.40	8,419.51	8,419.51	....	....	....	5,132.60	....	....	333.99	333.99
CURRY COUNTY														
Bituminous macadam, Denmark-Port Orford	22,000.00	7,204.06	7,204.06	9,000.00	7,204.06	7,204.06	....	....	....	13,000.00	....	....	....	....
Regrading and resurfacing, Denmark-Port Orford	125,000.00	98,018.65	98,018.65	81,756.41	86,854.55	86,854.55	....	....	....	43,243.59	11,164.10	11,164.10	5,925.84	5,925.84
DESCHUTES COUNTY														
Regrading, Pilot Butte-Horse Ridge	76,000.00	73,220.65	73,220.65	22,759.32	35,837.65	35,837.65	....	....	....	53,240.68	37,383.00	37,383.00	6,213.61	6,213.61
DOUGLAS COUNTY														
Bridge over Canyon Creek	2,849.58	2,849.58	2,849.58	1,417.21	1,417.21	1,417.21	....	....	....	1,432.37	1,432.37	1,432.37	632.85	632.85
HOOD RIVER AND WASCO COUNTIES														
Betterment materials, Hood River-The Dalles	25,000.00	16,444.11	16,444.11	25,000.00	16,444.11	16,444.11	....	....	....	....	....	....	422.18	422.18
JACKSON COUNTY														
Paving, Medford-Phoenix	137,000.00	104,888.05	104,888.05	57,082.15	63,990.51	63,990.51	....	....	....	79,917.85	40,897.54	40,897.54	9,634.22	9,634.22
Bituminous macadam, Prospect-Park Boundary	49,500.00	46,593.84	46,593.84	49,500.00	46,593.84	46,593.84	....	....	....	....	....	....	566.81	566.81
Regrading and resurfacing, Keene Creek-Jenny Creek	152,000.00	133,430.06	133,430.06	69,647.62	61,980.43	61,980.43	....	....	....	82,352.38	71,449.63	71,449.63	6,859.19	6,859.19
Regrading and surfacing, Prospect-Rogue River Bridge	10,036.63	10,036.63	10,036.63	10,036.63	10,036.63	10,036.63	....	....	....	....	....	....	765.77	765.77
Grading, revisions near Central Point	10,500.00	1,504.12	1,504.12	10,500.00	1,504.12	1,504.12	....	....	....	....	....	....	140.81	140.81

TABLE X—Continued

PROJECT	Estimated Total Cost	Expended During 1929 and 1930	Total Expended to Date	STATE COOPERATION			COUNTY COOPERATION			GOVERNMENT COOPERATION			CONSTRUCTION ENGINEERING (Included in preceding columns)	
				State Share of Cost	Expended by State During 1929 and 1930	Total Expended by State to Date	County Share of Cost	Expended by County During 1929 and 1930	Total Expended by County to Date	Government Share of Cost	Expended by Government During 1929 and 1930	Total Expended by Government to Date	Expended During 1929 and 1930	Total Expended to Date
JACKSON AND KLAMATH COUNTIES														
Regrading and surfacing, Jenny Creek-Keno	$ 180,000.00	$ 87,155.18	$ 87,155.18	$ 180,000.00	$ 87,155.18	$ 87,155.18	$	$	$	$	$	$	$ 5,626.19	$ 5,626.19
JOSEPHINE COUNTY														
Bituminous macadam, Deer Creek-Shattuck Corner	58,527.92	58,527.92	58,527.92	29,778.32	29,778.32	29,778.32				28,749.60	28,749.60	28,749.60	3,455.28	3,455.28
KLAMATH COUNTY														
Bituminous macadam, Klamath Falls Project	150,000.00	117,722.81	117,722.81	135,038.98	117,722.81	117,722.81				14,961.02			4,505.49	4,505.49
Betterment materials, Sand Creek Section	21,013.02	21,013.02	21,013.02	21,013.02	21,013.02	21,013.02								
Regrading, Klamath Falls-Lakeview Junction	37,477.16	37,477.16	37,477.16	37,477.16	37,477.16	37,477.16							4,751.96	4,751.96
Ditching, Ft. Klamath Junction-Modoc Point	16,818.05	16,818.05	16,818.05	16,818.05	16,818.05	16,818.05							12.00	12.00
Ditching, Lakeview Junction-Merrill	12,914.38	12,914.38	12,914.38	12,914.38	12,914.38	12,914.38							14.00	14.00
LAKE COUNTY														
Bituminous macadam, Lakeview Section	3,800.00			3,800.00										
LANE COUNTY														
Bituminous macadam, Eugene Project	190,000.00	74,661.39	74,661.39	170,892.45	74,661.39	74,661.39				19,107.55				
Bituminous macadam, Springfield Bridge Approaches	5,290.48	5,290.48	5,290.48	5,290.48	5,290.48	5,290.48								
Non-skid, Benton County Line-Junction City	6,528.48	6,528.48	6,528.48	6,528.48	6,528.48	6,528.48								
Non-skid, Junction City-Eugene	14,019.34	14,019.34	14,019.34	14,019.34	14,019.34	14,019.34								
Widening, Nimrod-Belknap Springs	20,103.80	20,103.80	20,103.80	20,103.80	20,103.80	20,103.80							866.74	866.74
Betterment materials, Triangle Lake-Low Pass Summit	38,000.00	7,637.62	7,637.62	38,000.00	7,637.62	7,637.62							217.92	217.92
LANE AND BENTON COUNTIES														
Betterment materials, Unit 4, Willamette Valley Project	18,359.58	18,359.58	18,359.58	18,359.58	18,359.58	18,359.58							190.73	190.73
LINCOLN COUNTY														
Resurfacing, Pioneer Mountain-Eddyville	150,000.00	323.03	323.03	75,000.00	323.03	323.03				75,000.00			73.33	73.33
Bituminous macadam, Otter Rock-North	19,306.08	19,306.08	19,306.08	19,306.08	19,306.08	19,306.08								
Bituminous macadam, Eddyville-Benton County Line	16,000.00	14,872.72	14,872.72	16,000.00	14,872.72	14,872.72								
Regrading, Pioneer Mountain-Eddyville	64,000.00	34,747.01	34,747.01	25,682.07	34,747.01	34,747.01				38,317.93			3,842.86	3,842.86
Steel girder at Monterey Undercrossing	2,854.03	2,854.03	2,854.03	2,854.03	2,854.03	2,854.03								
LINCOLN AND TILLAMOOK COUNTIES														
Widening and resurfacing, Neskowin-Otis	150,000.00	113,582.54	113,582.54	79,445.50	85,313.29	85,313.29				70,554.50	28,269.25	28,269.25	16,670.13	16,670.13
LINN COUNTY														
Non-skid materials, Jefferson-Albany	6,239.38	6,239.38	6,239.38	6,239.38	6,239.38	6,239.38								
Bank protection, Santiam River at Jefferson	26,832.10	14.03	26,832.10	13,556.46	Cr. 248.91	13,556.46	RR 13,275.64	RR 262.94	RR 13,275.64					78.45
Grade widening, Tangent-Shedd	33,000.00	6,528.97	6,528.97	13,460.10	6,528.97	6,528.97				19,539.90			681.24	681.24
LINN AND MARION COUNTIES														
Betterment materials, Unit 5, Willamette Valley Project	18,378.82	18,378.82	18,378.82	18,378.82	18,378.82	18,378.82							710.26	710.26
MALHEUR COUNTY														
Regrading and surfacing, Snake River Slides Section	67,180.16	67,180.16	67,180.16	32,641.51	43,449.96	43,449.96				34,538.65	23,730.20	23,730.20	5,109.70	5,109.70
Regrading and surfacing, Dead Ox Flat and Weiser Spur	122,000.00	4,292.00	4,292.00	71,038.33	4,292.00	4,292.00				50,961.67			476.34	476.34
Prospecting materials, Snake River Slides-Ontario	1,159.33	1,159.33	1,159.33	1,159.33	1,159.33	1,159.33							47.75	47.75
MALHEUR AND HARNEY COUNTIES														
Vale Oiling Project	190,000.00	121,561.55	121,561.55	134,695.71	121,561.55	121,561.55				55,304.29			5,794.45	5,794.45
MULTNOMAH AND HOOD RIVER COUNTIES														
Betterment materials, Portland-Hood River	82,000.00	41,531.96	41,531.96	82,000.00	41,531.96	41,531.96							1,653.47	1,653.47
POLK COUNTY														
Non-skid, Salem-Dallas	12,541.97	12,541.97	12,541.97	12,541.97	12,541.97	12,541.97								
Non-skid, Yamhill County Line-Holmes Gap	6,200.00	3,855.03	3,855.03	6,200.00	3,855.03	3,855.03								
Non-skid, Rickreall-Monmouth	6,500.00	2,123.77	2,123.77	6,500.00	2,123.77	2,123.77								
Non-skid, Monmouth-Independence	1,300.00	743.33	743.33	1,300.00	743.33	743.33								
Bituminous macadam, Valley Junction Section	1,600.00	720.33	720.33	1,600.00	720.33	720.33								
Betterment materials, Unit 3, Willamette Valley Project	16,707.16	16,707.16	16,707.16	16,707.16	16,707.16	16,707.16							876.29	876.29
Bituminous macadam, Holmes Gap Section	2,250.00	305.32	305.32	2,250.00	305.32	305.32								
Grade widening, Clow Corner-Monmouth	23,000.00	6,307.66	6,307.66	9,288.87	6,307.66	6,307.66				13,711.13			730.27	730.27
SHERMAN COUNTY														
Betterment materials, DeMoss Springs-Grass Valley	78,209.60	78,209.60	78,209.60	39,091.45	51,711.16	51,711.16				39,118.15	26,498.44	26,498.44	4,023.39	4,023.39
Widening, DeMoss Springs-Grass Valley	31,362.41	31,362.41	31,362.41	31,362.41	31,362.41	31,362.41							2,039.46	2,039.46
SHERMAN AND WASCO COUNTIES														
Betterment materials, The Dalles-John Day River	84,000.00	75,571.44	75,571.44	48,828.85	75,571.44	75,571.44				35,171.15			2,221.17	2,221.17
TILLAMOOK COUNTY														
Bituminous macadam, Mohler-Wheeler	4,608.44	4,608.44	4,608.44	4,608.44	4,608.44	4,608.44								
Bituminous macadam, Wheeler-Brighton	10,954.29	10,954.29	10,954.29	10,954.29	10,954.29	10,954.29								
Bituminous macadam, Brighton-Rockaway	18,400.00	10,883.58	10,883.58	18,400.00	10,883.58	10,883.58								
Bituminous macadam, Moore Cut-off	8,200.00	194.43	194.43	8,200.00	194.43	194.43								
Bituminous macadam, Hebo-Cloverdale	10,208.57	10,208.57	10,208.57	10,208.57	10,208.57	10,208.57								
Bituminous macadam, Cloverdale-Neskowin	24,500.00	20,709.95	20,709.95	24,500.00	20,709.95	20,709.95								
Resurfacing, Pleasant Valley-Hemlock	42,000.00	444.97	444.97	42,000.00	444.97	444.97								

TABLE X—Continued

PROJECT	Estimated Total Cost	Expended During 1929 and 1930	Total Expended to Date	STATE COOPERATION			COUNTY COOPERATION			GOVERNMENT COOPERATION			CONSTRUCTION ENGINEERING (Included in preceding columns)	
				State Share of Cost	Expended by State During 1929 and 1930	Total Expended by State to Date	County Share of Cost	Expended by County During 1929 and 1930	Total Expended by County to Date	Government Share of Cost	Expended by Government During 1929 and 1930	Total Expended by Government to Date	Expended During 1929 and 1930	Total Expended to Date
UMATILLA COUNTY														
Bituminous macadam, Pendleton-Union County Line	$ 13,523.00	$ 13,523.00	$ 13,523.00	$ 13,523.00	$ 13,523.00	$ 13,523.00	$	$	$	$	$	$	$	$
Bituminous macadam, Morrow County Line-Umatilla	5,854.97	5,854.97	5,854.97	5,854.97	5,854.97	5,854.97								
Regrading and resurfacing, Morrow County Line-Umatilla	37,589.43	37,589.43	37,589.43	7,668.59	23,930.40	23,930.40				29,920.84	13,659.03	13,659.03	3,654.01	3,654.01
Ditching, Emigrant Hill-Kamela	23,241.08	23,241.08	23,241.08	23,241.08	23,241.08	23,241.08								
Widening shoulders, Athena-Milton	27,000.00	24,507.39	24,507.39	27,000.00	24,507.39	24,507.39								
UMATILLA AND UNION COUNTIES														
Regrading, Kamela-Hilgard	225,000.00	196,127.40	196,127.40	106,842.60	107,761.83	107,761.83				118,157.40	88,365.57	88,365.57	10,825.65	10,825.65
Surfacing, Kamela-Hilgard	133,000.00	47,414.62	47,414.62	73,395.76	41,695.24	41,695.24				59,604.24	5,719.38	5,719.38	3,410.53	3,410.53
UNION COUNTY														
Bituminous macadam, Lone Pine-Hot Lake	3,253.68	3,253.68	3,253.68	3,253.68	3,253.68	3,253.68								
Resurfacing and betterment materials, Hilgard-La Grande	45,000.00	37,370.42	37,370.42	21,940.60	16,906.90	16,906.90				23,059.40	20,463.52	20,463.52	2,952.28	2,952.28
Regrading, La Grande-Hot Lake	47,000.00	10,833.68	10,833.68	18,785.05	10,833.68	10,833.68				28,214.95			871.70	871.70
WALLOWA COUNTY														
Bituminous macadam, Lostine-Enterprise	17,500.00	8,464.94	8,464.94	17,500.00	8,464.94	8,464.94								
WASCO COUNTY														
Non-skid, The Dalles Project	137,000.00	77,645.37	77,645.37	111,720.00	77,645.37	77,645.37				25,280.00			3,262.39	3,262.39
Bituminous macadam, The Dalles-Deschutes River	30,190.94	30,190.94	30,190.94	12,190.94	30,190.94	30,190.94				18,000.00			40.24	40.24
Resurfacing, Tygh Ridge Section	16,390.76	16,390.76	16,390.76	16,390.76	16,390.76	16,390.76							46.20	46.20
WASHINGTON COUNTY														
Paving, Multnomah County Line-Beaverton	120,000.00	88,831.77	88,831.77	120,000.00	88,831.77	88,831.77							4,033.44	4,033.44
Non-skid, Hillsboro-East	1,300.00	886.73	886.73	1,300.00	886.73	886.73								
Non-skid, Hillsboro-Forest Grove	7,051.71	7,051.71	7,051.71	7,051.71	7,051.71	7,051.71								
Non-skid, Forest Grove-Gaston	9,000.00	8,121.21	8,121.21	9,000.00	8,121.21	8,121.21								
Betterment materials, Unit 1, Willamette Valley Project	14,428.28	14,428.28	14,428.28	14,428.28	14,428.28	14,428.28							262.47	262.47
Grading, Multnomah County Line-Beaverton	78,575.59	5,088.58	78,575.59	73,575.59	5,088.58	73,575.59	5,000.00		5,000.00				323.83	5,473.22
Widening through town of Aloha	11,616.61	11,616.61	11,616.61	11,616.61	11,616.61	11,616.61								
Regrading, Multnomah County Line-Middleton	129,000.00	36,040.00	36,040.00	83,750.31	36,040.00	36,040.00				45,249.69			1,152.09	1,152.09
Bridges over Tualatin River and Cedar Creek	74,578.48	74,578.48	74,578.48	28,115.33	74,578.48	74,578.48				46,463.15			3,459.42	3,459.42
YAMHILL COUNTY														
Betterment materials, Dolph-Valley Junction	19,000.00	6,679.31	6,679.31	19,000.00	6,679.31	6,679.31								
Non-skid, McMinnville-Polk County Line	4,748.29	4,748.29	4,748.29	4,748.29	4,748.29	4,748.29								
Grading, Agency Creek Bridge Approaches	611.26	611.26	611.26	611.26	611.26	611.26							11.50	11.50
Bridge over Agency Creek	8,494.88	8,494.88	8,494.88	3,869.17	3,869.17	3,869.17				4,625.71	4,625.71	4,625.71	962.42	962.42
Mercier Bridge over Yamhill River	12,732.31	12,732.31	12,732.31	6,484.61	6,484.61	6,484.61				6,247.70	6,247.70	6,247.70	1,240.14	1,240.14
YAMHILL AND POLK COUNTIES														
Betterment materials, Unit 2, Willamette Valley Project	21,000.00	16,144.37	16,144.37	21,000.00	16,144.37	16,144.37							377.98	377.98
Totals to September 30, 1930	$ 5 537,862.52	$ 3,581,632.93	$ 3,817,644.64	$3,955,191.11	$3,106,696.69	$3,273,955.43	$ 5,000.00 RR 13,275.64	$ RR 262.94	$ 5,000.00 RR 13,275.64	$1,564,395.77	$ 474,673.30	$ 525,413.57	$ 180,906.04	$ 195,547.02

SUMMARY

Cooperating Parties	Estimated Cooperative Shares	Expended Prior to Dec. 1, 1928	Expended Dec. 1, 1928, to Sept. 30, 1930	Total Expended to Date	Cost to Complete
State	$3,955,191.11	$ 167,258.74	$3,106,696.69	$3,273,955.43	$ 681,235.68
Counties	5,000.00	5,000.00		5,000.00	
Federal Government	1,564,395.77	50,740.27	474,673.30	525,413.57	1,038,982.20
Miscellaneous Contributors	13,275.64	13,012.70	262.94	13,275.64	
Totals	$5,537,862.52	$ 236,011.71	$3,581,632.93	$3,817,644.64	$1,720,217.88

TABLE XI

EXPENDITURES FOR SPECIAL MAINTENANCE WORK—DECEMBER 1, 1928, to SEPTEMBER 30, 1930

In this table are listed the expenditures on those projects which have to do with the repair and upkeep of sections of highway which have previously been constructed under the supervision of the State Highway Commission

PROJECT	Estimated Total Cost (All State Funds)	Expended Prior to Dec. 1, 1928	Expended During 1929 and 1930	Total Expended to Date	Estimated Cost to Complete	Expended Prior to Dec. 1, 1928	CONSTRUCTION ENGINEERING (Included in preceding columns)	
							Expended During 1929 and 1930	Total Expended to Date
BAKER AND UNION COUNTIES								
Maintenance materials, La Grande-Baker	$ 59,756.65	$ 55,539.94	$ 4,216.71	$ 59,756.65	$	$ 2,017.75	$	$ 2,017.75
BENTON COUNTY								
Resurfacing, Lincoln County Line-Alsea Mountain	38,000.00	....	27,989.77	27,989.77	10,010.23	....	1,674.33	1,674.33
BENTON AND LINCOLN COUNTIES								
Resurfacing, East Unit, Eddyville-Blodgett	61,616.95	59,589.10	2,027.85	61,616.95	....	1,542.49	....	1,542.49
Resurfacing, Corvallis-Kline's Mill	52,062.18	....	52,062.18	52,062.18	....	....	1,303.49	1,303.49
Maintenance materials, Missouri-Bend Section	16,182.20	....	16,182.20	16,182.20	....	....	1,040.46	1,040.46
COOS COUNTY								
Resurfacing and maintenance materials, Riverton-Coquille-Hoffman Bridge	59,338.00	11,632.69	47,705.31	59,338.00	....	2,058.66	1,132.11	3,190.77
COOS AND DOUGLAS COUNTIES								
Maintenance materials, Endicott Creek-Mystic Creek	59,328.07	....	59,328.07	59,328.07	....	....	1,566.68	1,566.68
CURRY COUNTY								
Resurfacing, Gold Beach-Myers Creek	24,204.33	....	24,204.33	24,204.33	....	....	947.91	947.91
DESCHUTES COUNTY								
Maintenance materials, Redmond Section	15,117.32	15,067.32	50.00	15,117.32	....	10.00	....	10.00
GILLIAM, MORROW AND UMATILLA COUNTIES								
Maintenance materials, Arlington-Pendleton	111,042.98	106,124.85	4,918.13	111,042.98	....	5,087.46	982.00	6,069.46
GILLIAM, SHERMAN AND WASCO COUNTIES								
Maintenance materials, Dillon-Quinton and Wasco-Biggs	20,926.83	20,518.53	408.30	20,926.83	....	1,467.15	....	1,467.15
GILLIAM AND WHEELER COUNTIES								
Maintenance materials, Olex-Fossil	48,111.50	46,998.23	1,113.27	48,111.50	....	2,432.75	21.07	2,453.82
JACKSON COUNTY								
Maintenance materials, Prospect-Park Boundary	22,550.19	11,351.78	11,198.41	22,550.19	....	1,625.32	380.04	2,005.36
Maintenance materials, Medford-Prospect	40,459.50	39,609.50	850.00	40,459.50	....	3,756.59	....	3,756.59
KLAMATH COUNTY								
Resurfacing and maintenance materials, Keno-Klamath Falls	71,183.00	41,182.77	30,000.23	71,183.00	....	6,557.50	2,304.89	8,862.39
Maintenance materials, Klamath Falls-Merrill-Olene	151,190.87	76,694.03	74,496.84	151,190.87	....	7,115.89	3,520.83	10,636.72
Resurfacing and maintenance materials, Sand Creek Section	6,000.00	....	6,000.00	6,000.00	....	....	....	....
LANE COUNTY								
Surfacing, Nimrod-Belknap Springs	83,000.00	....	16,796.60	16,796.60	66,203.40	....	1,804.75	1,804.75
Resurfacing, Greenleaf Creek-Low Pass Summit	60,000.00	....	57,933.06	57,933.06	2,066.94	....	1,830.86	1,830.86
MORROW COUNTY								
Resurfacing, Jones Hill Section	1,242.90	1,080.60	162.30	1,242.90	....	5.70	....	5.70
POLK AND YAMHILL COUNTIES								
Maintenance materials, Grand Ronde-Sheridan	97,937.96	92,791.70	5,146.26	97,937.96	....	3,075.23	51.46	3,126.69
SHERMAN COUNTY								
Maintenance materials, Moro-Kent	30,151.54	26,369.73	3,781.81	30,151.54	....	2,130.26	68.61	2,198.87
TILLAMOOK AND YAMHILL COUNTIES								
Maintenance materials, Neskowin-Hebo-Grand Ronde	74,000.00	49,719.70	22,930.43	72,650.13	1,349.87	2,868.80	1,338.42	4,207.22
UMATILLA COUNTY								
Maintenance materials, Pilot Rock-Freewater "A"	13,359.38	14,360.38	Cr. 1,001.00	13,359.38	....	759.19	....	759.19
Maintenance materials, Pilot Rock-Freewater "B"	20,688.48	13,014.75	7,673.73	20,688.48	....	697.92	339.68	1,037.60
Resurfacing and maintenance materials, East Unit, Pendleton-Kamela	128,795.50	79,162.11	49,633.39	128,795.50	....	2,111.49	1,938.54	4,050.03
WALLOWA COUNTY								
Resurfacing, Lostine-Enterprise	48,616.20	....	48,616.20	48,616.20	....	....	2,210.98	2,210.98
WASCO COUNTY								
Maintenance materials, Dufur-Cow Canyon	37,375.69	18,316.59	19,059.10	37,375.69	....	2,067.70	1,162.42	3,230.12
Totals	$1,452,238.22	$ 779,124.30	$ 593,483.48	$1,372,607.78	$ 79,630.44	$ 47,387.85	$ 25,619.53	$ 73,007.38

TABLE XII

EXPENDITURES ON FOREST ROAD PROJECTS—TO SEPTEMBER 30, 1930

The expenditures of state funds as shown in the following table are the actual disbursements as shown by the books of the Highway Department. The expenditures of county funds and of federal government funds are as reported to the Highway Department by the United States Bureau of Public Roads, which bureau supervises all forest road work. It is to be noted that in those tables given in other parts of this report, which set out the total expenditures of the State Highway Department, only those expenditures upon forest road work which are made by the state are included.

All forest road projects upon the state highway system that have been undertaken since the beginning of cooperative forest road construction in 1917 are included in this table.

PROJECTS	Length in Miles	Estimated Total Cost Total	Total Expended to Date	STATE FUNDS				COUNTY FUNDS		FEDERAL FUNDS	
				State Share of Cost	Expended State Funds Prior to 1929	Expended State Funds During 1929-1930	Expended from State Funds to Date	County Share of Cost	Expended from County Funds to Date	Government Share of Cost	Expended from Government Funds to Date
BAKER AND GRANT COUNTIES											
Prairie City-Unity, survey	41.90	$ 7,000.00	$ 7,000.00	$ 2,500.00	$ 2,500.00	$	$ 2,500.00	$ 2,000.00	$ 2,000.00	$ 2,500.00	$ 2,500.00
Prairie City-Unity, grading and surfacing	42.52	614,192.20	614,192.20	146,985.34	146,985.34		146,985.34	160,110.76	160,110.76	307,096.10	307,096.10
CLACKAMAS AND HOOD RIVER COUNTIES											
Mt. Hood Loop, grading and surfacing	37.48	998,706.03	998,706.03	499,688.38	499,688.38		499,688.38			499,017.65	499,017.65
Mt. Hood Loop, roadbed widening	10.00	115,620.41	115,620.41							115,620.41	115,620.41
Laurel Hill-Government Camp, widening	5.51	120,000.00	96,656.39	70,000.00		70,000.00	70,000.00			50,000.00	26,656.39
CLACKAMAS AND WASCO COUNTIES											
Mt. Hood-Clear Lake, grading	7.46	141,000.00	141,000.00	70,500.00	70,500.00		70,500.00			70,500.00	70,500.00
Mt. Hood-Clear Lake, Barlow road		1,063.05	1,063.05	500.00	500.00		500.00			563.05	563.05
Mt. Hood-Wapinitia, survey	32.84	15,567.22	15,567.22	5,000.00	5,000.00		5,000.00			10,567.22	10,567.22
Mt. Hood-Clear Lake, maintenance		3,692.28	3,692.28	1,846.14	1,846.14		1,846.14			1,846.14	1,846.14
COOS COUNTY											
Hauser-Douglas County Line, grading and surfacing	8.33	163,116.55	163,116.55					83,000.00	83,000.00	80,116.55	80,116.55
Hauser-Lake Saunders, grading	3.30	68,674.06	68,674.06							68,674.06	68,674.06
CROOK COUNTY											
Ochoco Canyon Section, grading and surfacing	9.70	111,143.34	111,143.34	39,634.17	39,634.17		39,634.17	26,875.00	26,875.00	44,634.17	44,634.17
CURRY COUNTY											
Brush Creek-Mussel Creek, grading and surfacing	6.10	150,492.95	150,492.95	45,000.00	45,000.00		45,000.00	30,000.00	30,000.00	75,492.95	75,492.95
Mussel Creek-Euchre Creek, grading	4.90	129,289.11	129,289.11	71,289.11	71,289.11		71,289.11			58,000.00	58,000.00
Euchre Creek-Rogue River, surfacing	11.00	67,937.33	67,937.33							67,937.33	67,937.33
Mussel Creek-Gold Beach, survey		8,772.36	8,772.36							8,772.36	8,772.36
DESCHUTES COUNTY											
Sisters Section, surfacing	14.30	83,213.09	83,213.09	41,606.55	41,606.55		41,606.55			41,606.54	41,606.54
Sisters Section, maintenance		12,746.42	12,746.42	6,373.21	6,373.21		6,373.21			6,373.21	6,373.21
DESCHUTES AND LANE COUNTIES											
Sisters-Blue River, grading and surfacing	50.10	644,870.72	644,870.72	302,410.36	302,410.36		302,410.36	20,000.00	20,000.00	322,460.36	322,460.36
DOUGLAS COUNTY											
Tiller Trail, grading	3.94	100,000.00	100,000.00	33,333.33	33,333.33		33,333.33	33,333.33	33,333.33	33,333.34	33,333.34
Unit 1, Canyonville-Galesville, grading	9.90	211,000.00	211,000.00	94,000.00	94,000.00		94,000.00	23,000.00	23,000.00	94,000.00	94,000.00
Unit 2, Canyonville-Galesville, grading	1.10	98,776.86	98,776.86	88,776.86	88,776.86		88,776.86			10,000.00	10,000.00
GRANT COUNTY											
Beech Creek-Long Creek, survey	14.20	5,000.00	5,000.00					2,500.00	2,500.00	2,500.00	2,500.00
Fox Section, grading and surfacing	13.97	111,007.26	111,007.26					54,000.00	54,000.00	57,007.26	57,007.26
Beech Creek Section, grading and surfacing	4.02	41,909.99	41,909.99	20,000.00	20,000.00		20,000.00			21,909.99	21,909.99
Beech Creek Section, survey	6.53	1,881.40	1,881.40							1,881.40	1,881.40
JACKSON COUNTY											
Crater Lake-Prospect, grading	21.71	245,629.21	245,629.21	121,095.20	121,095.20		121,095.20	3,438.81	3,438.81	121,095.20	121,095.20
Trail-Prospect, grading and surfacing	13.60	300,210.38	300,210.38	150,000.00	150,000.00		150,000.00			150,210.38	150,210.38
Silver Lake-Park Boundary, surfacing	6.50	53,439.30	53,439.30							53,439.30	53,439.30
JEFFERSON COUNTY											
Black Butte-Suttle Lake, grading	4.31	58,000.00	34,033.19	13,000.00		13,000.00	13,000.00	13,000.00		32,000.00	21,033.19
JOSEPHINE COUNTY											
Hayes Hill, grading and surfacing	2.39	76,272.70	76,272.70	38,233.39	38,233.39		38,233.39	9,522.99	9,522.99	28,516.32	28,516.32
Oregon Caves, grading	11.68	204,624.55	204,624.55	102,312.27	102,312.27		102,312.27			102,312.28	102,312.28
O'Brien School-California Line, grading	5.39	85,887.93	85,887.93	75,887.93	75,887.93		75,887.93			10,000.00	10,000.00
O'Brien School-California Line, surfacing	5.39	32,000.00	32,000.00	16,000.00	16,000.00		16,000.00			16,000.00	16,000.00
Oregon Caves Section, widening, 1927	11.68	16,500.00	16,500.00							16,500.00	16,500.00
Oregon Caves Section, widening, 1928	11.68	37,000.00	37,000.00	25,000.00	25,000.00		25,000.00	5,000.00	5,000.00	7,000.00	7,000.00
Oregon Caves Section, widening, 1929	11.68	50,498.97	50,498.97	37,000.00		37,000.00	37,000.00	3,000.00	3,000.00	10,498.97	10,498.97
Oregon Caves Section, survey	11.68	2,110.12	2,110.12							2,110.12	2,110.12
KLAMATH COUNTY											
Unit 1, Anna Creek Section, grading and surfacing	3.50	14,207.13	14,207.13	7,103.56	7,103.56		7,103.56			7,103.57	7,103.57
Unit 2, Anna Creek Section, grading and surfacing	6.70	68,586.48	68,586.48	22,862.16	22,862.16		22,862.16	22,862.16	22,862.16	22,862.16	22,862.16
Ft. Klamath-Sand Creek, grading and surfacing	20.20	269,170.71	269,170.71					134,585.35	134,585.35	134,585.36	134,585.36
Beaver Marsh Section, grading and surfacing	17.00	227,525.06	227,525.06	113,762.53	113,762.53		113,762.53			113,762.53	113,762.53
Corral Springs Section, grading and surfacing	20.50	139,790.92	139,790.92	65,043.75	65,043.75		65,043.75	15,007.46	15,007.46	59,739.71	59,739.71
Sand Creek-Park Boundary, grading	4.23	16,000.00	16,000.00							16,000.00	16,000.00
Sand Creek-Park Boundary, surfacing	4.23	24,578.53	24,578.53							24,578.53	24,578.53
Sand Creek-Park Boundary, oil treatment	4.23	10,200.00	213.84							10,200.00	213.84

TABLE XII—Continued

PROJECTS	Length in Miles	Estimated Total Cost Total	Total Expended to Date	STATE FUNDS				COUNTY FUNDS		FEDERAL FUNDS	
				State Share of Cost	Expended State Funds Prior to 1929	Expended State Funds During 1929-1930	Expended from State Funds to Date	County Share of Cost	Expended from County Funds to Date	Government Share of Cost	Expended from Government Funds to Date
KLAMATH AND LAKE COUNTIES											
Lapine-Lakeview, survey, 1929	18.20	$ 1,758.74	$ 1,758.74	$ 879.37	$ 879.37	$	$ 879.37	$	$	$ 879.37	$ 879.37
Fremont Highway survey, revisions, 1929	16.24	2,280.23	2,280.23	......	......	......	......	......	......	2,280.23	2,280.23
Klamath Section, grading	8.30	49,000.85	49,000.85	......	......	......	......	......	......	49,000.85	49,000.85
Klamath County Line-East Forest Boundary, grading	7.70	50,100.00	50,083.61	......	......	......	......	......	......	50,100.00	50,083.61
West Forest Boundary-Drews Valley, grading and surfacing	11.70	249,619.74	249,619.74	126,919.50	126,919.50	......	126,919.50	......	......	122,700.24	122,700.24
KLAMATH AND LANE COUNTIES											
Lowell-Crescent, survey	84.30	27,000.00	27,000.00	13,500.00	13,500.00	......	13,500.00	......	......	13,500.00	13,500.00
LANE COUNTY											
Eugene-Florence, survey	24.00	7,732.82	7,732.82	3,866.41	3,866.41	......	3,866.41	......	......	3,866.41	3,866.41
Blachly-Rainrock, grading and surfacing	23.50	529,235.42	529,235.42	132,500.00	132,500.00	......	132,500.00	150,000.00	150,000.00	246,735.42	246,735.42
Portage Section, survey	3.60	1,675.58	1,675.58	......	......	......	......	......	......	1,675.58	1,675.58
Portage Section, grading and surfacing	2.16	40,076.69	40,076.69	......	......	......	......	10,000.00	10,000.00	30,076.69	30,076.69
Lost Saddle Section, survey	5.95	4,883.36	4,883.36	......	......	......	......	......	......	4,883.36	4,883.36
Florence-Rainrock, survey	19.60	17,778.41	17,098.41	3,000.00	3,000.00	......	3,000.00	......	......	14,778.41	14,098.41
Florence-Rainrock, grading railroad encroachments	7.70	742,000.00	463,814.82	300,000.00	......	350,000.00	350,000.00	150,000.00	80,000.00	292,000.00	33,814.82
Florence-Rainrock, embankment sections	5.50	150,000.00	......	......	......	......	......	37,500.00	......	112,500.00	......
Belknap Springs-East, surfacing	7.90	45,000.00	45,000.00	22,500.00	22,500.00	......	22,500.00	......	......	22,500.00	22,500.00
Dead Horse Grade, grading and surfacing	3.50	50,000.00	50,000.00	25,000.00	25,000.00	......	25,000.00	......	......	25,000.00	25,000.00
Summit Section, surfacing	10.50	62,775.89	62,775.89	31,387.94	31,387.94	......	31,387.94	......	......	31,387.95	31,387.95
Goodman Creek Section, grading	5.54	110,450.63	110,450.63	......	......	......	......	37,500.00	37,500.00	72,950.63	72,950.63
Lowell-Goodman Creek, surfacing	13.10	83,000.00	36,352.11	47,000.00	......	20,000.00	20,000.00	......	......	36,000.00	16,352.11
Willamette Highway, survey	8.80	9,079.00	8,611.72	......	......	......	......	......	......	9,079.00	8,611.72
China Creek-Berry Creek, grading	4.94	510,000.00	100,047.10	127,500.00	......	......	......	127,500.00	......	255,000.00	100,047.10
China Creek-Berry Creek, plans	......	5,820.02	5,527.82	......	......	......	......	......	......	5,820.02	5,527.82
LINCOLN COUNTY											
Unit 1, Alsea River, grading and surfacing	28.70	367,000.00	367,000.00	137,000.00	137,000.00	......	137,000.00	93,000.00	93,000.00	137,000.00	137,000.00
Unit 2, Alsea River, grading and surfacing	16.15	307,262.78	307,262.78	154,262.78	154,262.78	......	154,262.78	72,000.00	72,000.00	81,000.00	81,000.00
South Beach-Beaver Creek, grading	7.21	147,753.99	147,753.99	......	......	......	......	......	......	147,753.99	147,753.99
Beaver Creek, bridge	0.03	30,902.49	30,902.49	......	......	......	......	......	......	30,902.49	30,902.49
Seal Rocks-Alsea Bay, grading	5.60	113,000.00	102,379.47	63,000.00	......	58,023.95	58,023.95	......	......	50,000.00	44,355.52
Yaquina Bay-Alsea Bay, surfacing	14.00	166,000.00	46,460.18	83,500.00	......	20,000.00	20,000.00	......	......	82,500.00	26,460.18
Waldport Section, grading and bridge	1.24	41,000.00	39,389.35	28,000.00	......	28,000.00	28,000.00	......	......	13,000.00	11,389.35
Waldport Section, survey	2.11	1,581.01	1,581.01	......	......	......	......	......	......	1,581.01	1,581.01
LINCOLN AND TILLAMOOK COUNTIES											
Neskowin-Siletz, grading and surfacing	23.02	755,000.00	755,000.00	335,500.00	335,500.00	......	335,500.00	120,000.00	120,000.00	299,500.00	299,500.00
LINN COUNTY											
Santiam Highway, survey	49.10	26,581.98	25,281.98	......	......	......	......	......	......	26,581.98	25,281.98
Unit 1, Cascadia-Sheas Hill, grading and surfacing	3.80	80,266.78	80,266.78	......	......	......	......	38,000.00	38,000.00	42,266.78	42,266.78
Unit 2, Cascadia-Sheas Hill, grading and surfacing	6.60	128,332.53	128,332.53	......	......	......	......	63,500.00	63,500.00	64,832.53	64,832.53
Cascadia-East, grading	2.75	36,311.57	36,311.57	......	......	......	......	16,500.00	16,500.00	19,811.57	19,811.57
TILLAMOOK COUNTY											
Three River Section, grading and surfacing	8.70	209,900.37	209,900.37	149,528.51	149,528.51	......	149,528.51	18,624.69	18,624.69	41,747.17	41,747.17
UMATILLA COUNTY											
Ukiah-Albee, grading and surfacing	7.16	76,336.20	76,336.20	......	......	......	......	3,000.00	3,000.00	73,336.20	73,336.20
Ukiah-Dale, grading	8.40	200,000.00	83,905.43	62,500.00	......	20,000.00	20,000.00	75,000.00	20,000.00	62,500.00	43,905.43
Ukiah-Dale, survey	15.55	9,820.21	9,407.59	......	......	......	......	......	......	9,820.21	9,407.59
WALLOWA COUNTY											
Flora-Enterprise, survey	9.00	3,132.76	3,132.76	......	......	......	......	......	......	3,132.76	3,132.76
Flora-Enterprise, grading and surfacing	12.90	136,620.63	136,620.63	55,951.65	55,951.65	......	55,951.65	27,210.35	27,210.35	53,458.63	53,458.63
Flora Section, grading and surfacing	9.70	100,451.27	100,451.27	12,000.00	12,000.00	......	12,000.00	12,000.00	12,000.00	76,451.27	76,451.27
WASCO COUNTY											
Wapinitia Section, clearing 29.5 miles, grading	11.33	82,998.33	82,998.33	16,998.33	16,998.33	......	16,998.33	25,000.00	25,000.00	41,000.00	41,000.00
Elk Creek, grading 11.1 miles, Wapinitia surfacing	11.33	145,299.73	145,299.73	95,963.03	105,000.00	Cr. 9,036.97	95,963.03	......	......	49,336.70	49,336.70
Elk Creek, grading, 1929	2.31	48,087.61	48,087.61	......	......	......	......	......	......	48,087.61	48,087.61
Summit-Pole Hill, surfacing	13.67	98,300.00	80,453.74	......	......	......	......	......	......	98,300.00	80,453.74
WHEELER COUNTY											
Ochoco Canyon Section, grading and surfacing	9.73	219,010.12	219,010.12	105,060.12	105,060.12	......	105,060.12	4,900.00	4,900.00	109,050.00	109,050.00
Totals	......	$12,239,122.36	$11,028,159.49	$4,460,061.88	$3,637,598.85	$ 606,986.98	$4,244,585.83	$1,722,470.90	$1,419,470.90	$6,056,589.58	$5,364,102.76

SUMMARY

Cooperating Parties	Estimated Cooperative Shares	Expended Prior to Dec. 1, 1928	Expended Dec. 1, 1928, to Sept. 30, 1930	Total Expended to Date	Estimated Cost to Complete
State	$ 4,460,061.88	$3,637,598.85	$ 606,986.98	$ 4,244,585.83	$ 215,476.05
Counties	1,722,470.90	1,287,470.90	132,000.00	1,419,470.90	303,000.00
Federal government	6,056,589.58	4,531,665.47	832,437.29	5,364,102.76	692,486.82
Totals	$12,239,122.36	$9,456,735.22	$1,571,424.27	$11,028,159.49	$1,210,962.87

TABLE XIII

EXPENDITURES FOR MINOR ADDITIONS AND BETTERMENTS

December 1, 1928, to September 30, 1930

County	Expended Dec. 1, 1928, to Dec. 31, 1929	Expended Jan. 1, 1930, to Sept. 30, 1930	Total Expended Dec. 1, 1928, to Sept. 30, 1930
Baker	$ 6,314.76	$	$ 6,314.76
Benton	2,754.23	6,036.14	8,790.37
Clackamas	12,208.84	4,398.73	16,607.57
Clatsop	14,770.49	5,295.36	20,065.85
Columbia	53,541.62	1,107.12	54,648.74
Coos	12,783.06	14,878.65	27,661.71
Crook		1,774.83	1,774.83
Curry	13,013.66	14,894.75	27,908.41
Deschutes	2,529.26	1,532.72	4,061.98
Douglas	33,045.86	9,321.45	42,367.31
Gilliam	7,727.24	555.85	8,283.09
Grant	1,632.69	6,116.32	7,749.01
Harney	278.49		278.49
Hood River	7,996.31	3,973.80	11,970.11
Jackson	34,390.34	20,860.30	55,250.64
Jefferson	1,535.73	4,759.47	6,295.20
Josephine	9,244.36	4,551.11	13,795.47
Klamath	15,266.36	16,811.94	32,078.30
Lake	979.91	6,394.02	7,373.93
Lane	6,673.57	1,004.85	7,678.42
Lincoln	874.14	3,652.29	4,526.43
Linn	10.16	230.81	240.97
Malheur	7,871.31	20,303.88	28,175.19
Marion	25,188.80	1,168.75	26,357.55
Morrow	5,639.24	1,077.47	6,716.71
Multnomah	Cr. 113.04		Cr. 113.04
Polk	34,211.40	633.14	34,844.54
Sherman	20,777.98	782.53	21,560.51
Tillamook	31,897.64	17,417.84	49,315.48
Umatilla	53,025.47	26,010.11	79,035.58
Union	17,772.34	18,817.59	36,589.93
Wallowa	625.40	2,751.69	3,377.09
Wasco	35,592.53	23,166.55	58,759.08
Washington	14,322.50	3.00	14,325.50
Wheeler	4,210.84	7,880.88	12,091.72
Yamhill	13,221.69		13,221.69
Totals	$ 501,815.18	$ 248,163.94	$ 749,979.12

TABLE XIV

EXPENDITURES FOR GENERAL MAINTENANCE WORK

December 1, 1928, to September 30, 1930

County	Expended Dec. 1, 1928, to Dec. 31, 1929	Expended Jan. 1, 1930, to Sept. 30, 1930	Total Expended Dec. 1, 1928, to Sept. 30, 1930
Baker	$ 93,356.74	$ 62,114.30	$ 155,471.04
Benton	67,842.61	38,828.23	106,670.84
Clackamas	64,874.60	41,111.70	105,986.30
Clatsop	43,184.06	19,674.38	62,858.44
Columbia	27,239.00	11,286.44	38,525.44
Coos	145,831.40	70,952.10	216,783.50
Crook	27,537.37	22,699.76	50,237.13
Curry	84,109.60	78,383.28	162,492.88
Deschutes	86,383.92	55,049.44	141,433.36
Douglas	111,863.19	65,114.50	176,977.69
Gilliam	58,621.30	26,757.84	85,379.14
Grant	52,229.51	32,799.66	85,029.17
Harney	10,282.00	10,952.68	21,234.68
Hood River	96,990.22	42,299.81	139,290.03
Jackson	149,539.49	49,805.41	199,344.90
Jefferson	25,488.24	16,528.52	42,016.76
Josephine	52,608.79	31,831.00	84,439.79
Klamath	193,520.43	110,621.60	304,142.03
Lake	35,327.07	49,882.82	85,209.89
Lane	120,903.91	99,490.02	220,393.93
Lincoln	96,138.49	54,561.34	150,699.83
Linn	27,808.21	34,127.24	61,935.45
Malheur	51,790.86	52,151.83	103,942.69
Marion	18,822.62	22,709.92	41,532.54
Morrow	38,117.20	27,773.35	65,890.55
Multnomah	952.48	45,393.17	46,345.65
Polk	32,332.79	16,279.48	48,612.27
Sherman	44,789.71	23,442.28	68,231.99
Tillamook	110,495.25	58,487.24	168,982.49
Umatilla	163,209.06	96,858.04	260,067.10
Union	128,481.55	86,196.41	214,677.96
Wallowa	38,261.43	20,898.97	59,160.40
Wasco	94,636.19	58,634.27	153,270.46
Washington	11,914.40	8,247.41	20,161.81
Wheeler	40,787.90	27,025.21	67,813.11
Yamhill	42,299.06	26,560.46	68,859.52
Undistributed Expense	5,956.84	99,594.13	105,550.97
General Supervision	135,673.07	94,779.69	230,452.76
Totals	$ 2,630,200.56	$ 1,789,903.93	$ 4,420,104.49

TABLE XV

EXPENDITURES FOR ADDITIONS AND BETTERMENTS CLASSIFIED AS TO KINDS OF WORK

December 1, 1928, to September 30, 1930

The expenditures listed in this table are a repetition of the expenditures listed in Table XI, where major additions and betterments are classified by projects, and of the expenditures listed in Table XIV, where minor additions and betterments are classified by counties.

Classification	Expended Dec. 1, 1928, to Dec. 31, 1929	Expended Jan. 1, 1930, to Sept. 30, 1930	Total Expended Dec. 1, 1928, to Sept. 30, 1930
MINOR BETTERMENT			
Concrete Pavement (widening, resurfacing, etc.)	$ 4,634.02	$ 10.50	$ 4,644.52
Bituminous Pavement (widening, resurfacing, etc.)	16,301.68	380.29	16,681.97
Non-skid Treatment of Pavements	118,342.27	*	118,342.27
Concrete Shoulders to Pavement	....	8.90	8.90
Rock Shoulders to Pavement	5,633.90	3,413.50	9,047.40
Oiled Shoulders to Pavement	....	231.95	231.95
Bituminous Macadam Wearing Surface	71,374.40	4,135.11	75,509.51
Oiled Macadam Widening	9,146.03	2,029.41	11,175.44
Rock and Gravel Resurfacing	11,619.99	5,094.38	16,714.37
Regrading and Roadbed Widening	200,874.88	181,248.79	382,123.67
Bridge Betterment	43,859.62	27,298.46	71,158.08
Guard Fence	9,652.14	17,146.86	26,799.00
Snow Fence	10,376.25	1,049.03	11,425.28
Clearing of Dangerous Trees	....	6,116.76	6,116.76
Totals for Minor Betterment	$ 501,815.18	$ 248,163.94	$ 749,979.12
MAJOR BETTERMENT			
Concrete Pavement (repaving)	$ 172,416.05	$ 84,009.73	$ 256,425.78
Bituminous Pavement with Concrete Shoulders (repaving)	....	100,574.45	100,574.45
Rock for Bituminous Pavement	....	8,000.00	8,000.00
Rock Shoulders to Pavement	....	21,161.30	21,161.30
Bituminous Macadam Wearing Surface	139,711.99	429,497.78	569,209.77
Rock for Bituminous Macadam	56,631.57	254,750.92	311,382.49
Oil Treatment of Macadams	10,412.64	129,723.68	140,136.32
Rock for Oiling Macadams	....	6,679.31	6,679.31
Non-skid Treatment of Pavements	....	127,928.79	127,928.79
Rock for Non-skid Treatment	133.32	142,939.62	143,072.94
Broken Stone or Gravel Resurfacing	185,198.41	389,810.54	575,008.95
Bridge and Culvert Betterment	87,347.16	66,286.93	153,634.09
Bank Protection and Stream Control	862.36	....	862.36
Regrading and Roadbed Widening	518,487.62	577,295.40	1,095,783.02
Ditching and Drainage Work	56,619.38	15,153.98	71,773.36
Totals for Major Betterment	$1,227,820.50	$2,353,812.43	$3,581,632.93

* Charges for 1930 non-skid treatment under Major Betterment.

TABLE XVI

EXPENDITURES FOR MAINTENANCE CLASSIFIED AS TO KINDS OF WORK

December 1, 1928, to September 30, 1930

The expenditures listed in this table are a repetition of the expenditures listed in Table XI, where special maintenance expenditures are classified by projects, and of the expenditures listed in Table XIV, where general maintenance expenditures are classified by counties.

Classification	Expended Dec. 1, 1928, to Dec. 31, 1929	Expended Jan. 1, 1930, to Sept. 30, 1930	Total Expended Dec. 1, 1928, to Sept. 30, 1930
GENERAL MAINTENANCE			
Concrete Pavement	$ 7,225.19	$ 2,550.22	$ 9,775.41
Bituminous Pavement	199,046.92	101,376.22	300,423.14
Concrete Shoulders to Pavement	9.98	7,004.24	7,014.22
Oiled Shoulders to Pavement	11,468.03	3,667.18	15,135.21
Rock Shoulders to Pavement	54,888.98	30,472.74	85,361.72
Bituminous Macadam	51,470.10	30,736.84	82,206.94
Oiled Macadam:			
(a) New Oiling	250,008.40	111,509.72	361,518.12
(b) Reoiling	327,471.02	202,992.46	530,463.48
(c) Maintenance of Oiled Surface	357,983.13	223,095.92	581,079.05
Rock or Gravel Surface:			
(a) Ordinary Maintenance	309,720.09	190,186.70	499,906.79
(b) Unusual Maintenance	30,495.66	27,191.05	57,686.71
Roadbed and Right of Way:			
(a) General Maintenance	370,206.89	253,578.35	623,785.24
(b) Removal of Slides	83,436.78	61,366.50	144,803.28
(c) Cutting and Burning Weeds and Brush	56,972.41	49,778.34	106,750.75
(d) Guard Fence	23,851.70	15,075.97	38,927.67
Bridges	153,662.48	138,139.27	291,801.75
Snow Removal and Snow Fence	173,089.36	125,553.52	298,642.88
Prospecting for Quarries and Gravel Pits	7,623.12	1,936.30	9,559.42
Road Signs and Traffic Strips	24,410.90	18,012.43	42,423.33
Tree Maintenance	1,486.35	1,306.14	2,792.49
General Superintendence	135,673.07	94,779.69	230,452.76
Totals for General Maintenance	$2,630,200.56	$1,690,309.80	$4,320,510.36
SPECIAL MAINTENANCE			
Resurfacing Rock Macadam	$ 322,916.76	$ 57,378.19	$ 380,294.95
Production of Maintenance Materials:			
(a) For Bituminous Pavement Repair	6,179.16	493.57	6,672.73
(b) For Bituminous Macadam Repair	17,415.64	....	17,415.64
(c) For Future Bituminous Macadam Construction	29,213.79	....	29,213.79
(d) For Oiled Macadam Repair and New Oiling	122,653.86	37,232.51	159,886.37
Totals for Special Maintenance	$ 498,379.21	$ 95,104.27	$ 593,483.48

TABLE XVII

EXPENDITURES FOR OPERATION AND MAINTENANCE OF DRAW BRIDGES AND FERRIES

December 1, 1928, to September 30, 1930

DRAW BRIDGES:		
Young's Bay Bridge near Astoria	$ 5,754.78	
Lewis and Clark River Bridge near Astoria	5,287.03	
John Day River Bridge near Astoria	371.11	
Coquille River Bridge at Coquille	557.25	
Siletz River Bridge near Taft	3,930.04	
Interstate Bridge at Vancouver	*9,909.64	
Total for Draw Bridge Operation		$25,809.85
FERRIES:		
Coos Bay Ferry at North Bend	$48,049.52	
Rogue River Ferry at Wedderburn	24,616.03	
Bagnell Ferry near Gold Beach (emergency ferry)	1,423.78	
Total for Ferry Operation		74,089.33
Total for Draw Bridges and Ferries		$99,899.18

TABLE XVIII

EXPENDITURES IN CONNECTION WITH EQUIPMENT AND SUPPLIES

December 1, 1928, to September 30, 1930

This statement is a summary of the transactions handled through the equipment and supplies holding account. All expense in connection with equipment and supplies is charged against this account in the first instance, but is later charged out to the various classes and subdivisions of construction and maintenance work in the form of rentals, service charges, etc., leaving in the holding account only such amount as may be undistributed at the end of the year or as may represent increased value of equipment on hand.

CHARGES:		
Purchase of construction and maintenance equipment	$ 835,739.58	
Purchase of repair parts, supplies and materials	727,996.61	
Purchase of construction and maintenance materials and supplies	921,684.81	
Labor employed in upkeep of equipment and in handling of equipment, materials and supplies	458,497.33	
Insurance on stock and equipment	21,276.52	
Power, light and heat	18,645.58	
Maintenance and betterment of buildings and grounds	7,302.58	
New buildings and grounds	52,914.73	
Gross total of charges		$3,044,057.74
CREDITS:		
Credits from rental of equipment	$1,215,456.33	
Credits for construction and maintenance materials and supplies furnished	873,404.27	
Credits for repair parts, materials and supplies furnished	575,012.60	
Credits for labor performed	79,740.98	
Credits for sale of equipment and salvaged materials	15,096.50	
Gross total of credits		2,758,710.68
Net charge		$ 285,347.06

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*Total cost less revenues from joint users and less proportion paid by state of Washington.

TABLE XIX

EXPENDITURES FOR EXTRA RIGHT OF WAY, QUARRY SITES AND MAINTENANCE PATROL STATIONS

December 1, 1928, to September 30, 1930

EXTRA RIGHT OF WAY

Extra Right of Way, Haines-Baker Section	$ 19.21
Extra Right of Way for Snow Fence, Baker-Cornucopia Highway	264.80
Extra Right of Way on Mt. Hood Loop within Forest Boundary	62.50
Extra Right of Way, Multnomah County Line-Sandy	928.40
Extra Right of Way, Astoria-Seaside	7,975.66
Extra Right of Way, Astoria-Columbia County Line	575.00
Extra Right of Way on Roosevelt Coast Highway in Coos County	3,130.00
Extra Right of Way on Roosevelt Coast Highway in Curry County	2,565.00
Right of Way for Revision north of Bend	1,460.00
Right of Way, Bend-Horse Ridge Section	1,903.00
Right of Way on Pacific Highway in Douglas County	2,809.00
Extra Right of Way along Pacific Highway in Jackson County	2,316.00
Right of Way on Crater Lake Highway in Jackson County	125.00
Extra Right of Way, Wasco County Line-Madras	150.00
Extra Right of Way along Pacific Highway in Josephine County	4.75
Right of Way on The Dalles-California Highway in Klamath County	1,000.00
Right of Way on McKenzie Highway in Lane County	6,118.75
Right of Way near Pleasant Hill	301.33
Right of Way, Florence-Rainrock	3.50
Right of Way on Salmon River Road	3.80
Right of Way on Old Oregon Trail in Malheur County	1,710.20
Right of Way, Holmes Gap Revision	276.80
Right of Way, Monmouth-Independence	184.65
Right of Way, Willamina-Grande Ronde	295.50
Extra Right of Way at Hebo	19.00
Extra Right of Way, Tillamook-Clatsop County Line	10,900.00
Right of Way, Pendleton-Washington State Line	321.40
Extra Right of Way, La Grande-Hot Lake	831.88
Extra Right of Way, Kamela-La Grande	77.57
Right of Way on Old Oregon Trail in Union County	3,112.50
Right of Way on Wapinitia Highway in Wasco County	7,962.99
Right of Way, Beaverton-Multnomah County Line	40,613.83
Right of Way on West Side Pacific Highway in Washington County	4,634.50
Total for Extra Right of Way	$102,656.52

QUARRY SITES

Quarry and Park Site, 2½ miles west of Blodgett	$ 3.80
Quarry Site near Noon Station	400.00
Mikko Hovi Gravel Pit near Clatskanie	189.87
Kronenberg Quarry at Bandon	1,500.00
Sixes River Gravel Pit north of Port Orford	200.00
Pilot Butte Quarry Site east of Bend	1,000.00
Quarry Site at Drain	1,382.37
Kinsey Quarry Site near Trail	200.50
Deer Creek Gravel Pit near Selma	500.00
Quarry Site at Yachats	204.74
Gravel Pit south of Cairo	300.00
Sturgiss Quarry, 8 miles west of Pendleton	5.14
Furgason Gravel Pit near Lone Pine	125.00
Gravel Pit, 5 miles west of Wapinitia	12.75
Total for Quarry Sites	$ 6,024.17

TABLE XIX—Continued

MAINTENANCE PATROL STATIONS

Maintenance Patrol Station Site at Baker	$ 600.00
Maintenance Patrol Station Site, 6½ miles south of Philomath	155.80
Maintenance Patrol Station at Corvallis	5,266.90
Maintenance Patrol Station Site at Canemah	428.19
Maintenance Patrol Station near Government Camp	258.95
Maintenance Patrol Station at Sandy	4,236.16
Maintenance Patrol Station at Prineville	21.00
Maintenance Patrol Station at Bend	68.65
Maintenance Patrol Station at Redmond	90.80
Maintenance Patrol Station at Austin	255.81
Maintenance Patrol Station at Burns	5,338.80
Maintenance Patrol Station Site at Siskiyou	24.90
Maintenance Patrol Station at Sand Creek	23.42
Maintenance Patrol Station at Chemult	316.81
Maintenance Patrol Station at Beatty	12.50
Maintenance Patrol Station, 8½ miles west of Keno	188.00
Maintenance Patrol Station Site at Paisley	2,831.13
Maintenance Patrol Station Site at Lakeview	514.35
Maintenance Patrol Station at Burnt Woods	1.94
Maintenance Patrol Station Site between Huntington and Ontario	528.50
Maintenance Patrol Station at Ontario	4,724.83
Maintenance Patrol Station Site at Rufus	18.00
Maintenance Patrol Station at Pendleton	11,318.04
Maintenance Patrol Station Site at Athena	1,596.57
Maintenance Patrol Station at Meacham	4,588.77
Office Building at La Grande	3,287.57
Maintenance Patrol Station at La Grande	11,167.40
Total for Maintenance Patrol Stations	$ 57,863.79
Total for Extra Right of Way, Quarry Sites and Maintenance Patrol Stations	$166,544.48

TABLE XX

EXPENDITURES FOR SURVEYS

December 1, 1928, to September 30, 1930

In this table are listed the amounts expended by the State Highway Commission for surveys on state highway routes.

COUNTY AND SECTION OF HIGHWAY	Amount Expended
BAKER COUNTY	
Halfway to Carson, location	$ 193.97
Pleasant Valley-Durkee, revision	2,957.22
Durkee-Malheur County Line, revision	2,347.53
CLACKAMAS COUNTY	
Canemah-Canby, revision	90.44
Oswego-Multnomah County Line, revision	1,520.04
Mt. Hood Highway, revision in Clackamas County	841.38
CLATSOP COUNTY	
Astoria-Columbia County Line, revision	2,242.70
Hamlet Junction-Tillamook County Line, revision	1,907.50
Astoria-Seaside, revision	21.89
COLUMBIA COUNTY	
Clatskanie-Clatsop County Line, revision	130.09
Multnomah County Line-Rainier	674.94
COOS COUNTY	
Larson Slough and Haynes Slough, revision	438.51
Coos Bay Ferry Approaches, location	1,576.55
Myrtle Point-Douglas County Line, revision	577.65
CROOK COUNTY	
Prineville-Wheeler County Line, revision	59.06
Bear Creek-Central Oregon Highway, location	1,530.12
CURRY COUNTY	
Approaches to Rogue River Bridge at Gold Beach, location	903.01
Denmark-Port Orford, widening	2,280.91
Brush Creek-Mussell Creek, relocation	422.85
DESCHUTES COUNTY	
Bend-North, revision	5.00
Millican-Sage Hen Hill, location	6,881.53
DOUGLAS COUNTY	
Lane County Line-Gardiner, location	1,676.18
Comstock Overcrossing, revision	814.49
Umpqua Highway Connection at Reedsport, location	184.05
GRANT COUNTY	
Forest Boundary-John Day, location	1,055.02
Dale-Long Creek, reconnaissance	953.81
Coles Bridge-Prairie Creek, revision	1,034.70
HARNEY COUNTY	
Burns-Poison Creek, location	737.29
JACKSON COUNTY	
Gold Hill-Medford, revision	1,277.10
Green Springs Mountain-Klamath County Line, revision	10,962.15
Ashland-California Line, revision	5,387.63
JOSEPHINE COUNTY	
Grants Pass-Jackson County Line, revision	459.18
Rogue River Bridge at Grants Pass, location	1,410.96
KLAMATH COUNTY	
Jackson County Line-Klamath Falls, widening	4,281.84
Klamath Falls-Lakeview Junction, revision	1,020.04
Merrill-California Line, widening	1,929.82
Fort Klamath Junction-Klamath Falls, revision	633.80
LAKE COUNTY	
Lakeview-New Pine Creek, location	229.40
Lapine-Picture Rock Pass, location	1,994.53

TABLE XX—Continued

COUNTY AND SECTION OF HIGHWAY	Amount Expended
LANE COUNTY	
Springfield-Cogswell Hill, relocation	$ 1,717.09
McKenzie Bridge, revision	588.23
Douglas County Line-Florence, location	2,355.49
Sutton Lake-China Creek, location	9,994.32
Lincoln County Line-China Creek, location	3,533.05
Springfield-Blue River, location	4,930.74
Lowell-Oakridge, location	124.12
LINCOLN COUNTY	
Newport-Waldport, location	712.69
Yachats-Lane County Line, location	241.44
Waldport-Yachats, location	4,084.52
Toledo-Eddyville, revision	8,115.56
Waldport Connection, location	459.61
LINN COUNTY	
Sheas Hill-Cascadia, location	10.90
Lebanon-Sheas Hill, location	581.85
Santiam Highway, revision due to railroad location	195.52
Elimination of grade crossing north of Albany	1,702.34
Ranger Station-East, location	3,460.71
Albany-Harrisburg, widening	718.69
MALHEUR COUNTY	
Tunnel-Harper-Burrell Ranch, location	86.91
Juntura-Harper, location	8,578.59
Jamieson-Vale, widening	32.90
Snake River Slides-Ontario, widening	3,420.44
MARION COUNTY	
Pacific Highway at Aurora, revision	42.45
Aurora-Salem, revision	87.72
POLK COUNTY	
Willamina-Butler's Store, revision	342.31
SHERMAN COUNTY	
Biggs-Blalock, widening	935.39
Kent-Wasco County Line, revision	72.44
TILLAMOOK COUNTY	
Hebo-Dolph, revision	1,867.66
Tillamook-Wilson River, revision	2,218.65
Moore Cut-off, revision	1,021.57
UMATILLA COUNTY	
Umatilla-Washington State Line, location	8,028.67
Umatilla-Hermiston, revision	822.42
McKay Creek-Pendleton, widening	728.16
UNION COUNTY	
Umatilla County Line-Hilgard, revision	1,336.41
La Grande-Hot Lake, widening	1,097.56
WASCO COUNTY	
Sherman County Line-The Dalles-California Highway, revision	1,536.65
The Dalles-Deschutes River, revision	2,166.49
Wapinitia-The Dalles-California Highway, location	1,484.17
Sherman Highway Junction-Cow Canyon, revision	214.10
WASHINGTON COUNTY	
Multnomah County Line-Newberg, revision	4,138.95
Hillsboro-Beaverton, revision	345.88
Portland to Beach Resorts, reconnaissance	296.33
WHEELER COUNTY	
Mitchell-Mouth of Rock Creek, location	1,193.32
YAMHILL COUNTY	
Butler's Store-Dolph, revision	383.64
Total	$149,651.53

TABLE XXI

EXPENDITURES FOR CONSTRUCTION ENGINEERING ON COUNTY WORK

December 1, 1928, to September 30, 1930

The expenditures included in this table are for engineering work in connection with construction work performed by county forces or under county contracts. Only those expenditures for which the state is not to be reimbursed or has not yet been reimbursed by the counties are included.

COUNTY AND SECTION OF HIGHWAY	Amount Expended
BAKER COUNTY	
Halfway to Carson	$ 3,481.79
COLUMBIA COUNTY	
Milton Creek Bridge near St. Helens	14.00
DOUGLAS COUNTY	
Scottsburg-Drain	395.91
HARNEY COUNTY	
Lake County Line-Burns	Cr.* 242.08
LAKE COUNTY	
Lakeview-Harney County Line	Cr.*1,466.29
LINCOLN COUNTY	
Otis Section of Salmon River Highway	4.00
POLK COUNTY	
Tillamook County Line-Grande Ronde	138.33
TILLAMOOK COUNTY	
Nestucca River Bridge at Woods	36.50
UMATILLA COUNTY	
Lazinka Ranch-Albee	136.64
Nelson Canyon Section	708.53
UNION COUNTY	
Weston-Elgin, reconnaissance	18.06
Total	$ 3,225.39

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* This credit represents a reimbursement of the state by the county for construction engineering expenditures made during the previous biennium.

TABLE XXII

EXPENDITURES FOR PARKS AND TIMBER PRESERVATIONS

December 1, 1928, to September 30, 1930

COUNTY AND NAME OR LOCATION	Amount Expended
BAKER COUNTY	
Dooley Mountain Park site	$ 510.00
Park site, 6 miles south of Unity	80.38
CLACKAMAS COUNTY	
Barlow Monument site	87.67
Wildcat Park, 10 miles east of Sandy	75.60
CLATSOP COUNTY	
Bradley Park at Clatsop Crest (near Westport)	830.41
CURRY COUNTY	
Brush Creek Park site, south of Port Orford	2,804.00
Timber preservation, 11 miles north of Gold Beach	503.81
Battle Rock Park at Port Orford	3,183.91
Port Orford Cedar Park near Denmark	2,400.00
Park site near Hunter Creek	300.00
DESCHUTES COUNTY	
Lava River Caves Park, 11 miles south of Bend	536.85
Pilot Butte Park at Bend	184.44
Park site, 1 mile north of Bend	78.82
DOUGLAS COUNTY	
Camas Mountain Park site	127.50
HOOD RIVER COUNTY	
Viento Park, east of Cascade Locks	716.64
Ziba Dimmick Park at Bridge over East Fork of Hood River	1,000.00
JEFFERSON COUNTY	
Ogden Park at Crooked River Bridge north of Redmond	177.80
KLAMATH COUNTY	
Timber preservation along Klamath Falls-Lakeview Highway	35.31
LANE COUNTY	
Park between Monroe and Junction City	9.34
Timber preservation between Blachly and Cheshire	141.80
Woahink Park site, 3 miles south of Glenada	5,000.00
LINCOLN COUNTY	
Otter Crest Park, 10 miles north of Newport	55.14
Rocky Creek Park, 11 miles north of Newport	28.22
Devils Punch Bowl Park, 8 miles north of Newport	77.48
Park site at Yachats	Cr. 21.07
Salmon River Timber preserve	3,961.62
MULTNOMAH COUNTY	
Guy W. Talbot Park, 2 miles east of Crown Point	6,005.66
POLK COUNTY	
Holman Park, 4 miles west of Salem	116.90
Sarah Helmick Park, 6 miles south of Monmouth	145.36
Valley Junction Park	325.00
UMATILLA COUNTY	
Park at Emigrant Springs near Meacham	10,645.74
Timber preserve between Deadman's Pass and Umatilla County Line	14,786.49
Timber preserve near Albee	6,366.80
UNION COUNTY	
Timber preserve, 2 miles north of Hilgard	702.94
Gangloff Park, 1 mile north of La Grande	99.89
WALLOWA COUNTY	
Timber preserve, 5 miles west of Wallowa	2,003.75
WASCO COUNTY	
Mayer Park at Rowena Loops	98.11
Memaloose Park, 2 miles east of Mosier	41.39
Park site at mouth of Deschutes River	306.16
WHEELER COUNTY	
Timber preservation, 10 miles south of Fossil	5,000.00
Total	$ 69,529.86

TABLE XXIII

EXPENDITURES FOR GENERAL AND MISCELLANEOUS PURPOSES

December 1, 1928, to September 30, 1930

In this table are listed all expenditures that are not covered in the tables preceding. The expenditures included in it are those which can not be charged out to projects, but which must be carried as general expense. They consist of expenditures in payment of interest and maturities on bonds, expenditures for administration and general supervision of the state highway work, expenditures for enforcement of traffic laws, and expenditures for miscellaneous purposes.

ADMINISTRATION AND GENERAL SUPERVISION		
General Administration		$ 35,557.81
State Highway Commission		7,023.75
Legal Department		31,549.19
Auditing Department		38,616.26
Office of Chief Clerk		17,962.52
Office Engineering Department		62,032.67
Bridge Engineering Department		72,563.99
Materials Testing Department		21,707.33
State Highway Engineer		16,967.33
Division Office No. 1, Salem		17,647.87
Division Office No. 2, Salem		16,547.87
Division Office No. 3, Grants Pass		24,221.02
Division Office No. 4, Bend		23,721.81
Division Office No. 5, La Grande		26,712.41
Maintenance Department		43,286.12
Parks and Right-of-Way Department		7,509.14
Total		$ 463,627.09
INTEREST AND MATURITIES ON BONDS		
Interest on Bonds		$2,921,893.17
Maturities on Bonds		3,750,000.00
Total		$6,671,893.17
ENFORCEMENT OF TRAFFIC LAWS		
Total for this item		$ 141,097.10
MISCELLANEOUS GENERAL EXPENSE		
Mile-posting The Dalles-California Highway		$ 35.23
Investigating Effect of Heavy Truck Traffic on Highways		645.04
Paint Investigation by Bridge Department		149.49
Operation of Highway Magnet		1,254.95
Wm. R. Broughton Marker at Crown Point		150.00
Federal Cooperative Traffic Census		15,555.89
Mile-posting the John Day Highway		1,960.57
Contributions to State Restoration Fund		101.26
State Traffic Census Prior to September, 1929		5,713.91
Publication of Road Maps		1,536.73
Publication of Biennial Report (1927-28)		4,385.96
Special Litigation Not Chargeable to Particular Jobs		68.48
Expense of Advisory Committee on Highway Beautification		178.02
Industrial Accident Insurance Holding Account	Cr.	206.20
Maintenance Patrolman's Badge Account		45.70
Receipts from Telephone Company for Use of Albany Bridge to Support Cables	Cr.	200.00
Damage Claims Ordered Paid by Legislature		1,790.00
Credits Account of Unclaimed Warrants	Cr.	667.14
Credits for Unclaimed or Uncashed Payroll Checks	Cr.	316.84
Expense in Connection with Highway Improvement Districts		580.94
Refund of Salesman's Motor Vehicle License Fees and Gasoline Tax, Refund Ordered Paid by Legislature		7,797.36
Cooperation with State Motor Association in Road Signing		1,418.80
Refund of Fines Erroneously Paid Into Highway Fund		3,324.15
Total		$ 45,302.30

TABLE XXIV

MARKET ROAD RECEIPTS AND DISBURSEMENTS

December 1, 1928, to September 30, 1930

The receipts and disbursements listed in this table are the actual receipts and disbursements during the fiscal period December 1, 1928, to September 30, 1930. They are not the receipts and disbursements for the tax years 1929 and 1930. For receipts and disbursements for the tax years 1929 and 1930, see page 75 and the market road tables in Part IV.

COUNTY	Receipts from State Market Road Tax	Disbursements	
		Cash Payments to Counties	* Advances to Counties in Service Materials and Supplies
Baker	$ 45,708.73	$ 63,538.72	$ Cr. 291.99
Benton	32,707.16	45,465.25	
Clackamas	102,930.87	143,080.06	Cr. 752.31
Clatsop	37,472.79	48,713.52	
Columbia	35,203.12	48,934.83	24.55
Coos	39,635.06	55,047.09	
Crook	10,970.09	15,209.06	40.38
Curry	6,595.02	9,097.69	Cr.1,524.80
Deschutes	25,608.16	34,155.44	432.66
Douglas	62,871.23	86,811.91	Cr. 558.04
Gilliam	19,339.64	26,882.99	Cr.1,653.65
Grant	14,619.82	20,322.51	
Harney	17,210.58	16,318.09	2,808.08
Hood River	19,878.37	27,632.71	
Jackson	46,240.96	64,221.61	
Jefferson	7,829.36	10,873.79	
Josephine	11,583.24	16,087.34	Cr. 282.57
Klamath	66,369.33	91,626.32	1.25
Lake	20,590.02	27,174.50	911.35
Lane	105,750.03	146,998.57	Cr.1,129.12
Lincoln	17,245.48	23,942.51	14.10
Linn	66,321.69	92,191.96	1,238.03
Malheur	18,288.77	25,400.32	
Marion	76,173.61	140,293.14	Cr. 28.28
Morrow	21,887.14	30,424.65	
Multnomah	817,803.09	224,470.26	4.00
Polk	27,737.54	38,523.24	
Sherman	19,756.46	27,462.85	
Tillamook	43,596.43	60,603.13	Cr. 562.75
Umatilla	93,220.57	129,570.42	Cr. 533.57
Union	30,036.42	41,715.97	3.00
Wallowa	20,732.67	28,821.56	
Wasco	36,716.85	51,040.75	
Washington	70,821.85	98,308.94	218.38
Wheeler	9,398.88	11,581.59	61.01
Yamhill	46,691.66	64,905.38	
Sub-totals	$2,145,542.69	$2,087,448.67	$*Cr.1,560.29
Deficit on hand Dec. 1, 1928	20,874.60		
Expended for administration and supervision			30,456.66
Totals	$2,124,668.09	$2,087,448.67	$ 28,896.37

The amounts given in the above statement do not include $41,438.63 disbursed by Harney county in connection with contract market road work on the Nigger Flat-Vanderveer section of the Burns-Drewsey Market Road, which disbursement, by reason of the work having been supervised by the Highway Department, was recorded in the Highway Department's books.

*The credits appearing in this column indicate that county reimbursements of the state for advances made prior to December 1, 1928, have exceeded the amounts of advances made since that date.

LEFT—ON THE UMPQUA HIGHWAY WEST OF SCOTTSBURG; CENTER—ON THE McKENZIE HIGHWAY EAST OF NIMROD; RIGHT—ON THE ALSEA HIGHWAY WEST OF ALSEA

PART FOUR

Statistical Information

Pertaining to

State Highways and County Roads

in the

State of Oregon

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TABLE No. 1

RECORD OF MILEAGES OF VARIOUS CLASSES OF HIGHWAY IMPROVEMENT AND MAINTENANCE WORK PERFORMED

The mileages given in these tables include all state and county cooperative work, all federal aid work, and such county work on state highways as has been paid for on vouchers drawn by the State Highway Department. Forest road work and work performed by county forces or under county contracts is not included.

NEW CONSTRUCTION

Year	Bituminous Pavement (Miles)	Concrete Pavement (Miles)	Bituminous Macadam Wearing Surface (Miles)	Rock and Gravel Surfacing (Miles)	Grading (Miles)
1913-1916	7.3	14.3	------	19.8	160.2
1917-1918	45.2	4.8	------	111.8	134.5
1919	144.6	18.5	------	87.0	277.3
1920	167.7	16.4	------	264.0	402.8
1921	125.0	51.0	------	433.9	449.7
1922	55.2	33.4	------	364.4	334.6
1923	5.2	15.6	------	378.8	243.9
1924	------	15.9	------	201.7	171.1
1925	0.6	7.6	------	146.1	177.2
1926	0.2	------	------	129.8	139.8
1927	------	0.8	3.3	136.0	79.4
1928	------	------	104.3	73.8	68.3
1929	------	3.8	51.5	51.0	113.4
1930	------	6.3	180.0	73.9	160.3
Totals	551.0	188.4	339.1	2,472.0	2,912.5

RECONSTRUCTION AND BETTERMENT

Year	Pavement Resurfacing and Widening (Miles)	Non-skid Treatment of Pavement (Miles)	Rock Surface Oiling (Miles)	Rock and Gravel Resurfacing (Miles)	Grade Widening (Miles)
1921	5.0	------	------	------	------
1922	9.3	------	------	24.2	49.6
1923	15.6	------	15.9	38.5	12.7
1924	------	------	55.2	127.5	20.8
1925	0.8	------	160.1	68.0	15.7
1926	8.4	------	343.6	40.1	9.9
1927	------	2.9	379.5	68.6	17.0
1928	------	9.8	240.1	86.1	15.9
1929	4.4	103.0	233.3	68.7	48.8
1930	10.5	124.0	144.4	187.1	146.8
Totals	* 54.0	239.7	1,572.1	708.8	337.2

* Consists of 20.3 miles of concrete repaving and 33.7 miles of bituminous repaving.

MAINTENANCE

Year	Bituminous Pavement (Miles)	Concrete Pavement (Miles)	Bituminous Macadam Surfacing (Miles)	Oiled Rock Surfacing (Miles)	Unoiled Rock Surfacing (Miles)	Graded Earth Roads (Miles)	Total (Miles)
1919	55	20	------	------	130	95	300
1920	195	40	------	------	200	315	750
1921	365	55	------	------	450	430	1,300
1922	485	105	------	------	850	410	1,850
1923	540	145	------	8	1,192	365	2,250
1924	545	160	------	44	1,456	245	2,450
1925	544	170	------	151	1,551	158	2,574
1926	545	171	------	403	1,552	174	2,845
1927	537	188	2	766	1,440	246	3,179
1928	536	189	30	1,071	1,366	173	3,365
1929	534	194	143	1,174	1,249	259	3,553
1930	533	199	249	1,303	1,146	242	3,672

TABLE No. 2

YEARLY EXPENDITURES ON WORK HANDLED UNDER THE SUPERVISION OF THE STATE HIGHWAY COMMISSION

Years 1917 to 1930

Year	State Funds	County Funds	Government Funds	Miscellaneous Contributors' Funds	Totals
1917	$ 674,249.61	$ 270,162.37	$	$	$ 944,411.98
1918	2,214,007.87	439,562.42			2,653,570.29
1919	6,248,304.16	368,550.01	224,851.60		6,841,705.77
1920	11,381,606.97	868,539.59	1,096,027.33	17,661.62	13,363,835.51
1921	15,000,824.65	985,831.42	2,181,956.65	46,378.16	18,214,990.88
1922	7,724,688.96	3,814,402.13	1,043,695.07	33,341.49	12,616,127.65
1923	7,287,991.77	2,199,707.40	1,719,088.71	129,634.73	11,336,422.61
1924	6,916,867.91	1,586,176.49	1,118,777.53	94,241.61	9,716,063.54
1925	10,611,283.45	1,327,243.26	1,327,328.92	62,520.74	13,328,356.37
1926	7,927,130.75	715,701.37	1,264,688.74	78,916.59	9,986,437.45
1927	8,474,609.91	618,679.22	1,111,521.64	58,632.08	10,263,442.85
1928	8,975,204.79	683,625.95	582,440.20	26,973.39	10,268,244.33
1929	10,160,542.57	532,907.15	624,415.28	9,969.29	11,327,834.29
1930*	10,013,219.64	185,051.98	927,451.26	5,379.34	11,131,102.22
Totals	$113,610,533.01	$14,596,140.76	$13,222,242.93	$ 563,629.04	$141,992,545.74

* To September 30.

TABLE No. 3

STATE FUNDS RECEIVED AND EXPENDED BY THE STATE HIGHWAY COMMISSION, 1917 to 1930

Year	Net Receipts (State Funds Only)	Net Expenditures
1917 (including $94,418.14 balance from 1916)	$ 1,802,190.22	$ 674,249.61
1918	1,759,600.15	2,214,007.87
1919	7,458,614.05	6,248,304.16
1920	11,320,354.05	11,381,606.97
1921	13,550,136.40	15,000,824.65
1922	9,608,966.45	7,724,688.96
1923	7,664,977.79	7,287,991.77
1924	6,115,536.48	6,916,867.91
1925	* 10,231,908.30	† 10,611,283.45
1926	7,345,080.19	7,927,130.75
1927	8,627,279.00	8,474,609.91
1928	8,721,396.09	8,975,204.79
1929	10,658,473.58	10,160,542.57
1930 (to September 30)	10,552,623.50	10,013,219.64
Totals	$115,417,136.25	$113,610,633.01
Balance on hand October 1, 1930		1,806,603.24
Totals	$	$115,417,136.25

* Includes $3,011,805 received from the sale of refunding bonds.
† Includes $3,000,000 used to refund short term bonds.

TABLE No. 4

SCHEDULE OF YEARLY INCOMES FROM DIFFERENT SOURCES—1917 to 1930, INCLUSIVE

Source of Income	1917-1921 Inclusive	1922	1923	1924	1925	1926
Balance on hand December 1, 1916	$ 94,418.14	$	$	$	$	$ ....
Bond sales (including accrued interest)	28,941,595.35	6,265,544.02	2,489,875.00	....	* 3,011,805.00	....
Motor vehicle license fees	4,213,524.60	2,358,987.02	2,902,476.56	3,419,808.55	3,788,533.19	4,260,000.00
Gasoline and distillate tax	1,643,355.31	944,310.46	1,975,174.23	2,358,277.17	3,073,068.11	3,013,149.20
One-quarter mill property tax	946,334.71	....	246,452.30	255,863.20	275,382.12	....
Interest on bank balances	51,666.76	40,124.95	48,084.45	62,047.49	57,601.02	38,372.94
Fines for traffic law violation	....	....	2,915.25	19,540.07	25,518.86	33,558.05
Subtotals (all state funds)	$35,890,894.87	$ 9,608,966.45	$ 7,664,977.79	$ 6,115,536.48	$*10,231,908.30	$ 7,345,080.19
County cooperation	2,932,645.81	3,814,402.13	2,199,707.40	1,586,176.49	1,327,243.26	715,701.37
Federal government cooperation	3,502,835.58	1,043,695.07	1,719,088.71	1,118,777.53	1,327,328.92	1,264,688.74
Miscellaneous cooperation	64,039.78	33,341.49	129,634.73	94,241.61	62,500.74	78,916.58
Totals	$42,390,416.04	$14,500,405.14	$11,713,408.63	$ 8,914,732.11	$*12,948,981.22	$ 9,404,386.89

* Includes $3,011,805 received and disbursed in connection with refunding of $3,000,000 of short term bonds.

TABLE No. 4—Continued

SCHEDULE OF YEARLY INCOMES FROM DIFFERENT SOURCES—1917 to 1930, INCLUSIVE

Source of Income	1917-1926 Inclusive	1927	1928	1929	1930 (To Sept. 30)	Dec. 1, 1916, to Sept. 30, 1930
Balance on hand December 1, 1916	$ 94,418.14	$	$	$	$	$ ....
Bond sales (including accrued interest)	*40,708,819.37	....	....	....	....	* 40,708,819.37
Motor vehicle license fees	20,943,329.92	4,620,000.00	4,926,609.20	5,422,144.27	5,655,325.34	41,567,408.73
Gasoline and distillate tax	13,007,334.48	3,887,655.24	3,657,288.38	5,036,055.17	4,509.905.32	30,098,238.59
Motor transportation fees	....	49,854.21	98,302.35	126,109.06	345,955.94	620,221.56
One-quarter mill property tax	1,724,032.33	....	....	....	....	1,724,032.33
Interest on bank balances	297,897.61	46,053.35	19,939.31	49,021.98	26,090.85	439,003.10
Fines for traffic violations	81,532.23	23,716.20	19,256.85	25,143.10	15,346.05	164,994.43
Subtotals (all state funds)	$*76,857,364.08	$ 8,627,279.00	$ 8,721,396.09	$10,658,473.58	$10,552,623.50	$*115,417,136.25
County cooperation	12,575,876.46	618,679.22	683,625.95	532,907.15	185,051.98	14,596,140.76
Federal government cooperation	9,976,414.55	1,111,521.64	582,440.20	624,415.28	927,451.26	13,222,242.93
Miscellaneous cooperation	462,674.94	58,632.08	26,973.39	9,969.29	5,379.34	563,629.04
Totals	$*99,872,330.03	$10,416,111.94	$10,014,435.63	$11,825,765.30	$11,670,506.08	$*143,799,148.98

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* Includes $3,011,805 received and disbursed in connection with refunding of $3,000,000 of short term bonds.

TABLE No. 5

SCHEDULE OF YEARLY EXPENDITURES—1917 to 1930, INCLUSIVE

The expenditures in this table include all expenditures in connection with work handled under the direct supervision of the State Highway Department during the period from December 1, 1916, to September 30, 1930. They do not include federal government and county expenditures on forest highway work, and they do not include expenditures in connection with market road work.

Classification of Expenditures	1917-1921 Inclusive	1922	1923	1924	1925	1926
New construction	$ 36,577,361.92	$ 9,340,261.39	$ 6,685,465.67	$ 4,906,783.90	$ 4,114,332.38	$ 3,744,425.85
Major additions and betterments		80,723.22	617,478.34	140,412.36	255,571.49	367,037.92
Special maintenance	55,383.37	158,743.75	265,748.64	625,740.80	390,257.90	374,244.72
Cooperation on forest roads	1,227,359.20	306,872.91	662,360.17	430,300.14	587,401.88	172,360.70
Minor additions and betterments		123,180.84	207,721.11	182,766.62	163,061.34	148,210.31
General maintenance	655,522.94	618,095.68	784,779.23	1,041,028.78	1,669,741.91	1,928,189.78
Rights-of-way, patrol stations, etc.		13,862.20	10,979.65	Cr. 3,183.22	8,899.33	22,035.45
Operations of drawbridges and ferries	911.29	3,668.37	6,042.85	5,844.81	9,456.28	7,377.18
Parks and timber preservations		1,211.58	5,894.32	14,153.86	14,982.80	20,745.61
Enforcement of traffic laws		14,791.16	18,975.16	27,848.33	35,879.78	50,544.04
Equipment and supplies (holding account)	307,315.63	Cr. 29,951.94	88,733.70	Cr. 54,767.58	Cr. 32,906.55	Cr. 32,055.40
Retirement of bonds		125,000.00	179,750.00	334,500.00	* 3,797,000.00	1,197,000.00
Interest and other bond expense	1,717,181.76	1,526,956.39	1,744,509.64	1,824,340.00	1,801,819.24	1,722,761.65
Administration and general supervision	678,197.57	175,622.76	172,293.69	164,123.22	176,591.53	187,085.86
Surveys	671,690.57	124,607.32	46,880.27	54,622.51	92,075.00	65,674.06
Engineering county construction	128,103.10	9,259.25	2,964.44	419.09	2,970.05	5,894.14
Miscellaneous general expense	Cr. 512.92	23,222.68	13,313.13	21,129.92	241,222.01	4,905.58
Totals	$ 42,018,514.43	$12,616,127.65	$11,336,422.61	$ 9,716,063.54	$* 13,328,356.37	$ 9,986,437.45

* Includes $3,000,000 disbursed in connection with the refunding of short term bonds.

TABLE No. 5—Continued

SCHEDULE OF YEARLY EXPENDITURES—1917 to 1930, INCLUSIVE

The expenditures in this table include all expenditures in connection with work handled under the direct supervision of the State Highway Department during the period from December 1, 1916, to September 30, 1930. They do not include federal government and county expenditures on forest highway work, and they do not include expenditures in connection with market road work.

Classification of Expenditures	1917-1926 Inclusive	1927	1928	1929	1930 (To Sept. 30)	Dec. 1, 1916, to Sept. 30, 1930
New construction	$ 65,368,631.11	$ 2,719,745.06	$ 1,983,788.75	$ 2,119,464.78	$ 2,291,167.57	$ 74,482,797.27
Major additions and betterments	1,461,223.33	230,979.51	429,341.20	1,227,820.50	2,353,812.43	5,703,176.97
Special maintenance	1,870,119.18	792,526.22	836,182.45	498,379.21	95,104.27	4,092,311.33
Cooperation on forest roads	3,386,655.00	147,859.76	103,084.09	82,000.00	524,986.98	4,244,585.83
Minor additions and betterments	824,940.22	221,263.76	721,639.62	501,815.18	248,163.94	2,517,822.72
General maintenance	6,697,358.32	2,314,490.87	2,424,272.08	2,630,200.56	1,789,903.93	15,856,225.76
Rights-of-way, patrol stations, etc.	52,593.50	43,894.69	77,522.10	94,866.20	71,678.28	340,554.77
Operation of drawbridges and ferries	33,300.78	9,564.62	34,652.77	60,990.40	38,908.78	177,417.35
Parks and timber preservations	56,988.17	31,891.71	77,291.41	29,595.91	39,933.95	235,701.15
Enforcement of traffic laws	148,038.47	57,929.53	65,460.48	77,393.10	63,704.00	412,525.58
Equipment and supplies (holding account)	68,900.46	115,138.59	Cr. 70,215.41	328,117.84	Cr. 42,770.78	399,170.70
Retirement of bonds	* 5,633,250.00	1,600,000.00	1,750,000.00	1,825,000.00	1,925,000.00	* 12,733,250.00
Interest and other bond expense	10,337,568.68	1,663,215.87	1,586,060.99	1,503,578.47	1,418,314.70	16,508,738.71
Administration and general supervision	1,553,914.63	215,112.26	194,703.87	243,234.27	220,392.82	2,427,357.85
Surveys	1,055,549.73	69,220.98	48,525.53	71,985.55	77,665.98	1,322,947.77
Engineering county construction	149,610.07	15,252.04	Cr. 13,569.58	3,489.23	Cr. 263.84	154,517.92
Miscellaneous general expense	303,280.40	15,357.38	19,503.98	29,903.09	15,399.21	383,444.06
Totals	$*99,001,922.05	$10,263,442.85	$10,268,244.33	$11,327,834.29	$11,131,102.22	$*141,992,545.74

* Includes $3,000,000 disbursed in connection with the refunding of short term bonds.

TABLE No. 6

EXPENDITURES FOR CONSTRUCTION WORK CLASSIFIED BY COUNTIES

Years 1917 to 1930, Inclusive

This table gives the totals of the expenditures made for construction work in each of the several counties during the 14-year period ending September 30, 1930. It includes expenditures for new construction, additions and betterments, surveys and the engineering of county construction. It includes also state expenditures in connection with forest highway work. It does not include expenditures for maintenance work or the expenditures of the federal government and counties in connection with forest highway construction work.

County	Total Amount Expended	Cooperation in Expenditures			
		By State	By County	By Federal Government	By Miscellaneous Contributors
Baker	$ 3,320,191.87	$ 1,775,544.44	$ 1,025,549.83	$ 434,010.97	$ 85,086.63
Benton	2,462,417.29	1,733,982.44	372,439.94	347,374.65	8,620.26
Clackamas	3,085,713.37	2,154,796.90	* 573,751.86	267,959.21	89,205.40
Clatsop	3,476,684.11	2,575,466.40	367,473.33	533,744.38	....
Columbia	2,147,420.09	1,980,959.58	13,762.86	152,697.65	....
Coos	2,989,753.88	1,691,538.70	825,197.50	458,983.08	13,600.00
Crook	1,116,475.68	698,415.87	232,482.50	85,577.31	....
Curry	3,701,686.69	2,655,796.81	227,542.72	918,347.16	....
Deschutes	1,448,698.77	954,832.51	188,167.19	305,699.07	....
Douglas	7,591,151.09	5,775,840.21	980,543.40	805,758.00	29,444.08
Gilliam	2,054,099.62	1,310,343.95	276,214.72	467,540.95	....
Grant	1,406,442.48	816,249.77	188,600.65	401,592.06	....
Harney	874,726.14	506,832.49	133,220.81	234,672.84	....
Hood River	2,502,998.47	2,160,292.38	283,001.46	59,704.63	....
Jackson	4,075,483.02	3,100,874.58	533,952.88	397,233.38	43,422.18
Jefferson	613,846.16	314,501.39	142,282.18	156,322.59	740.00
Josephine	2,883,957.27	2,506,749.54	100,077.78	277,129.95	....
Klamath	3,571,088.55	1,916,066.01	782,426.92	864,413.58	8,182.04
Lake	1,261,053.93	770,209.33	236,265.32	254,579.28	....
Lane	4,875,181.45	3,460,461.40	1,029,321.35	333,749.58	51,649.12
Lincoln	2,955,509.90	2,185,401.12	211,973.57	557,388.24	746.97
Linn	1,794,171.71	1,074,869.76	495,416.10	162,086.66	61,799.19
Malheur	1,988,814.97	1,296,473.15	270,722.44	391,619.38	30,000.00
Marion	1,424,164.20	858,558.21	284,258.78	281,157.49	189.72
Morrow	1,227,287.58	907,768.86	319,518.72	....	....
Multnomah	154,363.33	87,018.21	67,345.12	....	....
Polk	2,025,722.19	1,514,143.60	158,311.16	353,267.43	....
Sherman	1,227,882.44	627,922.31	274,322.61	323,889.73	1,747.79
Tillamook	2,499,948.83	1,733,988.05	460,717.85	305,242.93	....
Umatilla	3,497,044.46	2,379,521.78	741,971.20	363,169.50	12,381.98
Union	2,645,808.93	1,676,392.09	653,772.11	219,644.67	96,000.06
Wallowa	999,070.86	495,202.05	367,766.38	136,102.43	....
Wasco	4,324,187.44	2,237,675.74	895,683.72	1,180,598.32	10,229.66
Washington	1,869,288.95	1,572,167.58	116,612.50	172,428.55	8,080.32
Wheeler	1,653,409.29	952,822.87	184,078.49	516,507.93	....
Yamhill	2,672,822.47	1,760,730.31	466,321.33	435,161.75	10,609.08
Miscellaneous	7,281.00	7,281.00	....	....	....
Totals	$ 88,425,848.48	$ 60,227,691.39	$14,481,067.28	$13,155,355.33	$561,734.48
Expenditures for maintenance work	20,004,007.39	19,830,061.50	105,163.73	66,887.60	1,894.56
Expenditures for general purposes	33,562,689.87	33,552,780.12	9,909.75	....	....
Grand totals	$141,992,545.74	$113,610,533.01	$14,596,140.76	$13,222,242.93	$563,629.04

* Includes $170,000 paid by Multnomah county on the Mt. Hood Highway.

TABLE No. 7
EXPENDITURES FOR CONSTRUCTION WORK CLASSIFIED BY HIGHWAYS
Years 1917 to 1930, Inclusive

This table gives the totals of the expenditures made for construction work upon each of the several state highways during the 14-year period ending September 30, 1930. It includes expenditures for new construction, additions and betterments, surveys and the engineering of county construction. It includes also state expenditures in connection with forest highway work. It does not include expenditures for maintenance work or the expenditures of the federal government and counties in connection with forest highway construction work.

Hwy. No.	Highway	Total Amount Expended	Cooperation in Expenditures			
			By State	By County	By Federal Government	By Miscellaneous Contributors
1	Pacific	$ 15,672,829.57	$ 13,203,928.83	$ 1,108,418.17	$ 1,126,521.40	$233,961.17
2	Columbia River	10,699,723.29	8,910,372.26	388,934.62	1,390,186.75	10,229.66
3	West Side Pacific	4,227,503.14	2,983,564.01	397,512.51	827,737.22	18,689.40
4	The Dalles-California ..	4,442,100.07	1,812,338.83	1,242,882.65	1,386,138.59	740.00
5	John Day	3,958,489.42	1,957,782.77	660,545.24	1,340,161.41	....
6	Old Oregon Trail	4,868,096.36	3,249,298.20	718,039.65	737,148.02	163,610.49
7	Central Oregon	1,242,614.13	988,231.01	95,046.98	159,336.14	....
8	Oregon-Washington	2,405,704.21	1,943,796.26	461,907.95	....	....
9	Roosevelt Coast	12,494,200.82	8,132,442.06	1,661,183.05	2,699,828.74	746.97
10	Wallowa Lake	1,561,464.94	784,098.94	548,150.81	224,135.19	5,080.00
11	Enterprise-Flora	237,715.25	166,093.76	71,621.49	....	....
12	Baker-Cornucopia	889,147.03	264,931.79	495,476.18	128,739.06	....
13	Baker-Unity	720,239.25	389,126.11	331,113.14	....	....
14	Crooked River	391,172.93	292,671.95	99,500.98	....	....
15	McKenzie	1,294,258.45	789,312.11	282,738.68	222,207.66	....
16	Santiam	508,638.66	261,363.31	207,611.11	....	39,664.24
17	McKenzie-Bend	58,359.68	58,359.68	....	....	....
18	Willamette	445,954.77	158,555.08	287,399.69	....	....
19	Fremont	920,834.05	438,927.14	198,050.88	283,856.03	....
20	Klamath Falls-Lakeview	1,337,076.79	998,605.09	256,844.81	80,304.48	1,322.41
21	Green Springs	1,532,191.38	579,194.76	550,159.73	395,977.26	6,859.63
22	Crater Lake	1,347,576.81	950,233.84	188,000.00	209,342.97	....
23	Dairy-Bonanza	78,379.69	43,515.89	34,863.80	....	....
24	Burns-Crane	368,174.24	164,012.03	48,156.79	156,005.42	....
25	Redwood	927,766.99	596,129.22	54,507.82	277,129.95	....
26	Mount Hood	1,927,115.49	1,400,303.31	507,737.08	19,085.10	....
27	Alsea	1,109,303.36	830,546.28	278,757.08	....	....
28	Pendleton-John Day	401,527.25	261,470.62	140,056.63	....	....
29	Tualatin	1,753,878.23	1,399,464.28	200,893.95	153,520.00	....
30	Salem-Dallas	755,353.46	387,276.47	295,472.12	72,604.87	....
31	Albany-Corvallis	570,979.59	104,201.16	165,101.15	299,593.00	2,084.28
32	McMinnville-Tillamook	1,179,600.42	1,074,229.05	75,020.38	30,340.99	....
33	Corvallis-Newport	1,123,022.71	848,273.10	266,129.35	....	8,620.26
34	Siuslaw	1,021,140.39	786,339.96	234,800.43	....	....
35	Coos Bay-Roseburg	1,821,862.44	913,249.03	651,940.43	243,072.98	13,600.00
36	Pendleton-Cold Springs	222,243.48	31,004.04	191,239.44	....	....
37	Umatilla Cut-off	8,336.89	8,336.89	....	....	....
38	Oregon Caves	290,978.04	276,978.04	14,000.00	....	....
40	Bertha-Beaverton	55,375.85	55,375.85	....	....	....
41	Ochoco	1,237,746.63	811,335.88	168,593.13	257,817.62	....
42	Sherman	951,647.30	300,027.04	360,879.73	288,992.74	1,747.79
43	Monmouth-Independence	66,270.86	66,270.86	....	....	....
44	Wapinitia	203,319.64	203,319.64	....	....	....
	Undistributed expense..	1,095,934.53	352,804.96	542,779.65	145,571.74	54,778.18
	Totals	$ 88,425,848.48	$ 60,227,691.39	$14,481,067.28	$13,155,355.33	$561,734.48
	Expenditures for maintenance work	20,004,007.39	19,830,061.50	105,163.73	66,887.60	1,894.56
	Expenditures for general purposes	33,562,689.87	33,552,780.12	9,909.75	....	....
	Grand totals	$141,992,545.74	$113,610,533.01	$14,596,140.76	$13,222,242.93	$563,629.04

TABLE No. 8

EXPENDITURES FOR MAINTENANCE WORK CLASSIFIED BY COUNTIES

Years 1917 to 1930, Inclusive

This table gives the totals of expenditures made for maintenance work in each of the several counties during the 14-year period ending September 30, 1930. It includes all expenditures for special maintenance, general maintenance and operation of drawbridges and ferries.

County	Total Amount Expended	Cooperation in Expenditures			
		By State	By County	By Federal Government	By Miscellaneous Contributors
Baker	$ 855,125.14	$ 854,335.36	$ 789.78	$..........	$..........
Benton	562,633.95	562,318.14	315.81	....	....
Clackamas	558,061.09	557,820.12	240.97	....	....
Clatsop	511,951.53	489,355.62	21,701.35	....	894.56
Columbia	337,860.56	337,860.56	....	....	....
Coos	1,057,946.15	1,025,935.24	10,622.89	21,388.02	....
Crook	187,311.04	187,311.04	....	....	....
Curry	447,347.31	442,969.45	205.18	4,172.68	....
Deschutes	502,530.57	502,290.47	240.10	....	....
Douglas	938,646.00	933,862.78	4,783.22	....	....
Gilliam	612,286.70	609,987.56	2,299.14	....	....
Grant	262,679.35	260,249.18	2,430.17	....	....
Harney	63,509.47	63,397.55	111.92	....	....
Hood River	599,029.16	599,029.16	....	....	....
Jackson	871,574.34	866,751.87	4,822.47	....	....
Jefferson	226,487.88	226,487.88	....	....	....
Josephine	345,023.17	343,381.58	1,641.59	....	....
Klamath	1,357,704.31	1,356,488.24	48.52	1,167.55	....
Lake	190,183.67	190,183.67	....	....	....
Lane	733,955.71	731,948.65	2,007.06	....	....
Lincoln	505,068.53	504,748.03	320.50	....	....
Linn	242,959.47	240,079.01	2,880.46	....	....
Malheur	483,119.18	482,659.42	459.76	....	....
Marion	268,763.08	268,552.67	210.41	....	....
Morrow	569,181.99	566,205.26	2,976.73	....	....
Multnomah	64,973.33	64,973.33	....	....	....
Polk	287,490.92	286,891.85	599.07	....	....
Sherman	355,464.51	355,464.51	....	....	....
Tillamook	777,948.81	768,169.22	8,779.59	....	1,000.00
Umatilla	1,600,599.89	1,552,741.01	7,699.53	40,159.35	....
Union	923,053.24	922,538.55	514.69	....	....
Wallowa	370,657.31	370,657.31	....	....	....
Wasco	660,938.65	660,162.04	776.61	....	....
Washington	215,989.43	204,448.68	11,540.75	....	....
Wheeler	240,651.71	238,957.99	1,693.72	....	....
Yamhill	597,680.44	583,228.70	14,451.74	....	....
Undistributed expense	739,566.85	739,566.85	....	....	....
Totals	$20,125,954.44	$19,952,008.55	$105,163.73	$66,887.60	$ 1,894.56

TABLE No. 9

EXPENDITURES FOR MAINTENANCE WORK CLASSIFIED BY HIGHWAYS

Years 1917 to 1930, Inclusive

This table gives the totals of expenditures made for maintenance work upon each of the several state highways during the 14-year period ending September 30, 1930. It includes all expenditures for special maintenance, general maintenance and operation of drawbridges and ferries.

Hwy. No.	Highway	Total Amount Expended	Cooperation in Expenditures			
			By State	By County	By Federal Government	By Miscellaneous Contributors
1	Pacific	$ 1,927,632.52	$ 1,911,846.34	$ 15,786.18	$	$
2	Columbia	2,578,471.12	2,562,835.32	14,741.24		894.56
3	West Side Pacific	340,592.60	334,394.67	6,197.93		
4	The Dalles-California	1,755,976.06	1,755,102.66	48.52	824.88	
5	John Day	891,325.82	886,267.83	5,057.99		
6	Old Oregon Trail	2,094,251.77	2,053,019.09	1,073.33	40,159.35	
7	Central Oregon	68,514.77	68,499.32	15.45		
8	Oregon-Washington	621,874.37	616,522.91	5,351.46		
9	Roosevelt Coast	2,037,283.83	1,989,421.95	21,301.18	25,560.70	1,000.00
10	Wallowa Lake	666,878.25	666,878.25			
11	Enterprise-Flora	42,777.40	42,777.40			
12	Baker-Cornucopia	146,401.64	145,611.86	789.78		
13	Baker-Unity	76,746.50	76,746.50			
14	Crooked River	31,950.50	31,950.50			
15	McKenzie	320,185.91	320,185.91			
16	Santiam	75,077.15	75,077.15			
17	McKenzie-Bend	62,681.29	62,681.29			
18	Willamette	28,478.38	28,478.38			
19	Fremont	156,593.59	156,593.59			
20	Klamath Falls-Lakeview	182,978.04	182,978.04			
21	Green Springs	434,730.57	434,730.57			
22	Crater Lake	359,787.98	359,445.31		342.67	
23	Dairy-Bonanza	17,363.32	17,363.32			
24	Burns-Crane	39,435.92	39,339.45	96.47		
25	Redwood	145,261.19	145,261.19			
26	Mt. Hood	636,814.66	636,814.66			
27	Alsea	224,870.36	224,870.36			
28	John Day	18,456.93	18,456.93			
29	Tualatin	183,449.75	173,456.54	9,993.21		
30	Salem-Dallas	97,965.48	97,912.53	52.95		
31	Albany-Corvallis	22,230.03	21,430.03	800.00		
32	McMinnville-Tillamook	864,943.67	847,705.30	17,238.37		
33	Corvallis-Newport	548,978.43	548,657.93	320.50		
34	Siuslaw	239,681.22	239,681.22			
35	Coos Bay-Roseburg	806,067.94	802,229.77	3,838.17		
36	Pendleton-Cold Springs	33,573.82	33,573.82			
37	Umatilla Cut-off					
38	Oregon Caves	35,805.09	35,805.09			
40	Bertha-Beaverton	15,675.72	13,935.77	1,739.95		
41	Ochoco	243,767.32	243,767.32			
42	Sherman	260,445.88	260,445.88			
43	Monmouth-Independence	8,479.94	8.479.94			
44	Wapinitia	16,549.30	16,549.30			
	Undistributed expense	764,948.41	764,227.36	721.05		
	Totals, to Sept. 30, 1930	$20,125,954.44	$19,952,008.55	$105,163.73	$66,887.60	$ 1,894.56

TABLE No. 10

FOREST HIGHWAY EXPENDITURES ON STATE HIGHWAY ROUTES CLASSIFIED BY COUNTIES

Years 1917 to 1930, Inclusive

In this table are given the expenditures that have been made in connection with forest highway construction work on the state highway system. This work was supervised by the United States Bureau of Public Roads, and the amounts of federal government expenditure and county expenditure here shown are as reported by that bureau. The state expenditures shown are included also in the foregoing table No. 6, but the federal government and county expenditures are not included in that table. For a classification of these expenditures by highways see table No. 11.

County	Total Amount Expended	Cooperation in Expenditures		
		By State	By County	By Federal Government
Baker	$ 187,624.13	$ 93,520.06	$ 584.00	$ 93,520.07
Clackamas	807,343.96	366,111.76	....	441,232.20
Coos	231,790.61	....	83,000.00	148,790.61
Crook	111,143.34	39,634.17	26,875.00	44,634.17
Curry	356,491.75	116,289.11	30,000.00	210,202.64
Deschutes	222,954.67	106,546.57	5,000.00	111,408.10
Douglas	409,776.86	216,110.19	56,333.33	137,333.34
Grant	593,366.72	75,965.28	218,026.76	299,374.68
Hood River	504,948.75	252,643.93	....	252,304.82
Jackson	599,278.89	271,095.20	3,438.81	324,744.88
Jefferson	34,033.19	13,000.00	....	21,033.19
Josephine	504,894.27	294,433.59	17,522.99	192,937.69
Klamath	812,977.00	212,957.66	172,454.97	427,564.37
Lake	307,636.19	127,448.44	....	180,187.75
Lane	2,020,360.58	841,762.67	292,500.00	886,097.91
Lincoln	1,565,572.59	610,127.57	285,000.00	670,445.02
Linn	270,192.86	....	118,000.00	152,192.86
Tillamook	442,057.05	272,187.67	18,624.69	151,244.69
Umatilla	169,649.22	20,000.00	23,000.00	126,649.22
Wallowa	240,204.66	67,951.65	39,210.35	133,042.66
Wasco	416,852.08	141,740.19	25,000.00	250,111.89
Wheeler	219,010.12	105,060.12	4,900.00	109,050.00
Totals	$11,028,159.49	$4,244,585.83	$1,419,470.90	$5,364,102.76

TABLE No. 11

FOREST HIGHWAY EXPENDITURES ON STATE HIGHWAY ROUTES CLASSIFIED BY HIGHWAYS

Years 1917 to 1930, Inclusive

In this table are given the expenditures that have been made in connection with forest highway construction work on the state highway system. This work was supervised by the United States Bureau of Public Roads, and the amounts of federal government expenditure and county expenditure here shown are as reported by that bureau. The state expenditures shown are included also in the foregoing table No. 7, but the federal government and county expenditures are not included in that table. For a classification of these expenditures by counties see table No. 10.

Hwy. No.	Highway	Total Amount Expended	Cooperation in Expenditures		
			By State	By County	By Federal Government
1	Pacific	$ 309,776.86	$ 182,776.86	$ 23,000.00	$ 104,000.00
4	The Dalles-California	636,486.69	178,806.28	149,592.81	308,087.60
5	John Day	621,192.20	149,485.34	162,110.76	309,596.10
9	Roosevelt Coast	1,776,353.41	529,813.06	233,000.00	1,013,540.35
11	Enterprise-Flora	240,204.66	67,951.65	39,210.35	133,042.66
15	McKenzie	898,606.12	429,278.06	20,000.00	449,328.06
16	Santiam	304,226.05	13,000.00	118,000.00	173,226.05
18	Willamette	182,414.46	33,500.00	37,500.00	111,414.46
19	Fremont	103,123.43	879.37		102,244.06
20	Klamath Falls-Lakeview	249,619.74	126,919.50		122,700.24
22	Crater Lake	682,072.50	301,060.92	26,300.97	354,710.61
25	Redwood	194,160.63	130,121.32	9,522.99	54,516.32
26	Mt. Hood	1,210,982.83	569,688.38		641,294.45
27	Alsea	715,233.14	319,262.78	165,000.00	230,970.36
28	Pendleton-John Day	329,447.87	40,000.00	79,500.00	209,947.87
32	McMinnville-Tillamook	209,900.37	149,528.51	18,624.69	41,747.17
34	Siuslaw	1,064,517.10	489,366.41	240,000.00	335,150.69
38	Oregon Caves	310,733.64	164,312.27	8,000.00	138,421.37
41	Ochoco	330,153.46	144,694.29	31,775.00	153,684.17
44	Wapinitia	518,161.96	190,807.50	25,000.00	302,354.46
	Undistributed	140,792.37	33,333.33	33,333.33	74,125.71
	Totals	$11,028,159.49	$4,244,585.83	$1,419,470.90	$5,364,102.76

TABLE No. 12

STATISTICS PERTAINING TO FOREST HIGHWAY WORK ON STATE HIGHWAYS

The statistics here given apply to highway work in the State of Oregon performed under the supervision of the United States Bureau of Public Roads. All of the work included is upon state highways at points where these highways are in or adjacent to National Forests. The work is financed under cooperative agreements between the federal government, the state and the counties of the state, the federal funds being Oregon's proportionate share of funds annually appropriated by congress for forest road work.

The amounts of county and federal government expenditures here given, and the mileages of work performed, are as reported by the United States Bureau of Public Roads. The amounts of state expenditures are as shown by the disbursement records of the State Highway Commission.

For further details as to expenditures made in connection with forest road work see table XII in Part Three of this report.

EXPENDITURES ON FOREST HIGHWAY WORK

Year	Expenditures			
	State Funds	County Funds	Government Funds	Total
1918-1919-1920	$ 809,261.58	$ 102,271.45	$ 656,708.64	$ 1,568,241.67
1921-1922	724,970.53	67,142.21	836,765.18	1,628,877.92
1923-1924	1,092,660.31	725,942.05	1,725,176.76	3,543,779.12
1925-1926	759,762.58	231,960.04	730,225.77	1,721,948.39
1927	147,859.76	105,611.36	325,542.44	579,013.56
1928	103,084.09	54,543.79	257,246.68	414,874.56
1929	82,000.00	32,000.00	421,609.32	535,609.32
1930*	524,986.98	100,000.00	410,827.97	1,035,814.95
Totals	$4,244,585.83	$1,419,470.90	$5,364,102.76	$11,028,159.49

* Expenditures from January 1, 1930, to September 30, 1930.

MILEAGE OF WORK COMPLETED ON FOREST HIGHWAY PROJECTS

Year	Grading (Miles)	Grade Widening	Rock Surfacing (Miles)	Survey (Miles)
1918	4.30	----------	----------	121.92
1919	62.90	----------	----------	90.92
1920	56.10	----------	22.59	41.38
1921	20.68	----------	38.34	41.31
1922	15.69	----------	22.37	137.18
1923	61.00	----------	87.92	46.82
1924	153.37	----------	74.62	48.28
1925	34.70	----------	83.94	44.40
1926	52.32	----------	41.41	5.40
1927	25.10	14.70	53.50	11.30
1928	16.80	7.00	17.60	59.90
1929	18.80	.20	6.00	28.50
1930	25.04	5.31	25.88	8.96
Totals	546.80	27.21	474.17	686.27

TABLE No. 13

MILEAGES OF FOREST HIGHWAY WORK PERFORMED ON STATE HIGHWAYS DURING 1929 AND 1930

This table shows the mileages, by sections, of the different classes of work performed on the state highway system under the supervision of the United States Bureau of Public Roads during the period December 1, 1928, to December 31, 1930. The work is commonly referred to as forest highway work. It is located within or adjacent to the National Forests, and it is financed by the federal government assisted by cooperation from the state and from counties.

County and Section	Mileages			
	Grading	Grade Widening	Surfacing	Surveys
CLACKAMAS COUNTY				
Forest Boundary-Hood River County Line	....	5.51	....	....
JEFFERSON COUNTY				
Suttle Lake-Deschutes County Line	4.30	....	....	....
KLAMATH AND LAKE COUNTIES				
Lapine-Silver Lake	10.20	....	....	....
LANE COUNTY				
Goodman Creek Section	3.94	....	....	....
Lowell-Goodman Creek	....	....	9.17	....
Willamette Highway, relocation	....	....	....	8.80
Rainrock-Florence	6.31	....	....	....
China Creek-Berry Creek	.30	....	....	....
LINCOLN COUNTY				
Alsea Highway at Waldport	1.22	....	....	2.11
Yaquina Bay-Alsea Bay	10.04	....	9.04	....
LINN COUNTY				
Cascadia-East	.05	....	....	11.00
UMATILLA COUNTY				
Ukiah-Dale	6.78	....	....	15.55
WASCO COUNTY				
Wapinitia Highway	.70	....	13.67	....
Totals	43.84	5.51	31.88	37.46

TABLE No. 14

COUNTY BOND AND WARRANT INDEBTEDNESS IN CONNECTION WITH ROADS AND BRIDGES, JULY 1, 1930

The information contained in this tabulation was compiled by the State Treasurer.

County	Road Bonds Outstanding	Road Warrants Outstanding	Total Road and Bridge Debt	Sinking Fund	Net Road and Bridge Debt
Baker	$ 820,000.00	$	$ 820,000.00	$ 9,609.86	$ 810,390.14
Benton	189,000.00		189,000.00	86,840.96	102,159.04
Clackamas	1,445,000.00		1,445,000.00		1,445,000.00
Clatsop	296,000.00		296,000.00	167,344.17	128,655.83
Columbia	100,000.00		100,000.00	50,853.01	49,146.99
Coos	680,000.00	233,422.88	913,422.88	55,606.38	857,816.50
Crook	270,000.00		270,000.00		270,000.00
Curry	205,000.00		205,000.00	42,700.00	162,300.00
Deschutes	273,000.00	12,919.05	285,919.05	3,589.74	282,329.31
Douglas	627,000.00		627,000.00	593,348.21	33,651.79
Gilliam	305,000.00		305,000.00	19,044.02	285,955.98
Grant	415,000.00		415,000.00	15,084.73	399,915.27
Harney	195,000.00	29,816.39	224,816.39	10,688.16	214,128.23
Hood River	319,000.00		319,000.00	84,826.58	234,173.42
Jackson	401,000.00	66.33	401,066.33	411,063.43	*9,997.10
Jefferson	60,000.00		60,000.00		60,000.00
Josephine		74,542.44	74,542.44	21,676.33	52,866.11
Klamath	1,702,704.00		1,702,704.00	193,383.80	1,509,320.20
Lake	121,000.00		121,000.00		121,000.00
Lane	1,291,100.00		1,291,100.00	10,582.02	1,280,517.98
Lincoln	267,944.00		267,944.00	29,965.95	237,978.05
Linn					‡
Malheur	185,000.00		185,000.00	19,991.66	165,008.34
Marion	340,000.00		340,000.00		340,000.00
Morrow	550,000.00		550,000.00	15,861.00	534,139.00
Multnomah	11,960,000.00		11,960,000.00	643,794.90	11,316,205.10
Polk					‡
Sherman	300,000.00		300,000.00	59,231.13	240,768.87
Tillamook	255,400.00	15,665.41	271,065.41		271,065.41
Umatilla		41,423.32	41,423.32		41,423.32
Union	650,000.00		650,000.00	46,900.99	603,099.01
Wallowa	200,000.00	85,427.22	285,427.22	37,500.00	247,927.22
Wasco	646,000.00		646,000.00	31,524.00	614,476.00
Washington					‡
Wheeler	235,000.00		235,000.00	8,069.21	226,930.79
Yamhill	499,000.00		499,000.00	45,000.00	454,000.00
Totals	$25,803,148.00	$ 493,283.04	$26,296,431.04	$ 2,714,080.24	$23,582,350.80

* Surplus. ‡ No road indebtedness.

TABLE No. 15

COUNTY DISBURSEMENTS FOR ROAD PURPOSES—1923 to 1930, INCLUSIVE

This tabulation was compiled from information supplied by the officials of the respective counties, supplemented in a few instances by information from other sources. The amounts given are not represented to be more than approximate figures, although for many counties they are probably exact. For expenditures during years prior to 1923 see earlier reports of the State Highway Commission.

County	1923	1924	1925	1926	1927	1928	1929	1930 (Estimated)
Baker	$ 227,449.02	$ 245,207.31	$ 412,558.41	$ 232,316.27	$ 193,197.97	$ 159,600.34	$ 124,066.81	$ 106,700.00
Benton	130,096.14	162,763.08	183,790.82	234,907.43	188,507.94	116,882.49	133,257.35	135,000.00
Clackamas	741,396.00	797,591.16	861,189.80	1,123,064.47	598,680.10	729,625.73	730,565.47	581,716.90
Clatsop	331,068.20	447,471.68	426,013.44	402,551.36	392,296.48	355,580.77	251,499.07	237,645.00
Columbia	256,638.16	300,471.74	409,842.20	238.698.18	366,756.70	469,323.29	310,375.90	196,426.61
Coos	511,752.46	422,413.94	786,378.64	597,696.45	573,917.92	604,553.34	328.214.30	410.948.89
Crook	89,600.00	50,000.00	49,011.22	36,015.38	29,027.74	59,910.12	51,963.73	50,073.03
Curry	45,953.57	77,415.56	94,672.02	32,496.88	36,518.08	10,243.31	6,502.10	14,000.00
Deschutes	28,562.22	73,669.19	109,680.81	52,408,87	74,351.05	109,847.83	122,947.80	74,338.03
Douglas	505,855.44	412,598.32	363.657.27	328,825.60	414,885.83	260,750.00	250,792.78	250,000.00
Gilliam	187,307.98	122,599.13	69,741.92	41,378.73	43,778.40	81,061.92	75,155.60	8,722.41
Grant	70,268.64	55,444.42	38,355.75	87,953.27	71,323.04	54,395.86	59,770.56	84,696.19
Harney	49,314.73	40,077.47	65,254.48	94,624.30	91,892.64	103,525.39	77,243.71	58,814.35
Hood River	78,048.05	92,403.85	110.384.49	82,965.50	95,462.00	130,005.74	131,683.29	88,717.46
Jackson	304,190.68	465,045.45	307,345.45	165,625.81	288,222.65	298,212.06	344,788.30	350,000.00
Jefferson	39,541.80	40,845.61	31,072.01	36,581.58	37,390.29	40,566.63	36,378.65	19,633.24
Josephine	75,244.07	67,245.38	86,245.55	92,079.38	186,391.33	140,671.34	139,436.87	155,753.45
Klamath	655,182.52	329,727.42	263,921.42	255,152.84	171,015.44	506,008.41	223,970.53	178,550.11
Lake	93,207.00	123,240.31	101,862.22	81,255.36	101,053.41	73,911.70	78,523.79	74,383.32
Lane	782,177.50	600,408.68	562,286.34	515,702.23	635,985.08	845,550.45	660,738.44	820,513.22
Lincoln	300,424.12	270,371.88	207,988.77	190,391.32	182,195.43	186,091.65	203,131.21	201,500.00
Linn	332,643.22	413,213.62	575,933.98	426,230.83	386,270.10	519,000.94	558,534.01	525,000.00
Malheur	65,996.02	135,027.23	139,169.60	99,110.54	70,540.67	76,549.98	96,468.89	89,500.00
Marion	715,091.40	588,836.39	537,791.70	521,936.49	629,064.71	577,753.30	513,486.91	735,000.00
Morrow	120,370.11	140,724.49	82,511.74	209,222.45	98,730.48	178,739.32	159,763.63	150,000.00
Multnomah	537,624.20	1,750,358.88	3,668,661.20	3,651,949.64	3,708,517.44	1,988,829.33	1,820,094.18	3,126,218.24
Polk	147,017.58	194,740.91	155,340.35	184,458.06	144,892.19	199,739.10	167,190.11	180,000.00
Sherman	118,211.15	153,895.91	87,584.17	90,122.96	108,717.83	117,730.16	113,445.13	70,000.00
Tillamook	284,766.76	229,151.72	221,273.67	223,761.94	237,990.76	254,364.16	296,062.54	225,000.00
Umatilla	321,290.36	283,500.30	397,383.53	234,120.33	223,379.30	410,281.39	247,247.43	224,286.45
Union	318,670.87	327,002.91	106,450.86	130,564.64	147,606.98	169,880.71	109,826.08	165,509.03
Wallowa	143,105.02	151,642.77	105,992.45	134,003.36	140,324.92	102,077.90	128,656.54	99,539.63
Wasco	353,381.16	662,715.66	375,488.42	291,589.49	261,052.27	202,608.51	194,645.45	165,800.00
Washington	311,269.30	505,529.31	520,088.81	365,909.23	396,712.35	398,353.83	469,362.08	448,760.72
Wheeler	70,296.00	42,221.07	63,827.16	38,420.78	45,727.01	76,039.67	48,888.48	41,500.00
Yamhill	218,644.30	217,542.82	231,008.98	243,453.88	250,901.16	251,512.60	249,505.42	255,095.00
Total	$ 9,561,655.75	$10,993,115.57	$12,809,759.65	$11,767,545.83	$11,623,277.69	$10,859,779.27	$ 9,514,183.14	$10,599,341.28

TABLE No. 16

MILEAGES OF STATE HIGHWAYS BY COUNTIES

The mileages given in this table are inclusive of mileages within cities and towns.

County	Total Mileage of State Highways	Miles of Different Types of Improvement						
		Paved With Bituminous Pavement	Paved With Concrete Pavement	Bituminous Macadam Surfacing	Oiled Rock or Gravel Surfacing	Unoiled Rock or Gravel Surfacing	Graded to State Standards	Not Graded to State Standards
Baker	216.8	1.2	....	9.4	78.9	93.9	27.0	6.4
Benton	93.2	24.7	18.3	8.6	37.5	4.1	....	....
Clackamas	66.8	3.3	21.7	20.0	21.8	....	....	....
Clatsop	75.5	39.1	12.5	16.3	7.6	....	....	....
Columbia	55.4	54.5	0.9	....	....	....	....	....
Coos	101.0	1.2	21.2	9.0	57.1	11.4	....	1.1
Crook	82.0	....	....	....	15.9	29.2	36.1	0.8
Curry	90.6	....	....	5.7	51.3	33.1	....	0.5
Deschutes	202.7	3.5	....	....	116.3	12.1	68.5	2.3
Douglas	151.6	80.6	17.8	....	39.1	1.9	6.1	6.1
Gilliam	98.0	0.1	....	....	97.9	....	....	....
Grant	157.6	....	....	....	....	97.5	26.8	33.3
Harney	125.4	....	....	3.4	12.2	29.2	36.3	44.3
Hood River	69.2	26.7	0.5	1.8	40.2	....	....	....
Jackson	149.8	56.7	3.7	66.6	9.4	13.4	....	....
Jefferson	50.5	....	....	0.1	40.0	....	4.3	6.1
Josephine	96.1	34.6	....	10.8	34.2	9.2	7.3	....
Klamath	308.8	2.8	3.8	47.6	141.0	73.0	14.6	26.0
Lake	188.6	....	....	0.8	12.5	90.9	76.1	8.3
Lane	299.7	34.2	17.8	4.9	44.2	70.0	38.2	90.4
Lincoln	130.1	....	....	11.7	31.8	74.5	9.4	2.7
Linn	119.7	27.3	9.7	....	13.1	17.7	15.0	36.9
Malheur	190.7	1.8	1.0	7.5	86.7	42.4	5.4	45.9
Marion	43.4	33.5	9.9	....	....	....	....	....
Morrow	94.3	....	....	3.1	70.5	20.7	....	....
Multnomah	111.3	103.1	8.2	....	....	....	....	....
Polk	49.8	27.5	14.7	6.3	0.8	0.5	....	....
Sherman	64.0	....	....	15.9	47.7	0.4	....	....
Tillamook	85.2	10.6	4.2	30.0	32.2	8.2	....	....
Umatilla	241.7	41.9	....	17.0	74.0	73.5	6.7	28.6
Union	85.4	8.8	....	6.6	55.9	14.1	....	....
Wallowa	73.8	0.8	....	7.7	....	65.3	....	....
Wasco	166.1	23.3	....	8.3	81.5	45.6	7.4	....
Washington	42.2	23.1	19.1	....	....	....	....	....
Wheeler	107.8	....	....	....	7.0	77.3	23.5	....
Yamhill	73.9	18.9	37.8	4.6	12.6	....	....	....
Totals	4,358.7	683.8	222.8	323.7	1,370.9	1,009.1	408.7	339.7

TABLE No. 17

MILEAGES OF COUNTY ROADS

The mileages given here include mileages of market roads as well as mileages of other county roads. They do not include mileages of state highways. The mileages of pavement may be considered reasonably accurate, but the mileages of other types of improvement, and the total mileages, are not represented to be more than roughly approximate.

County	Total Mileage of County Roads	Miles of Different Types of Improvement					
		Paved With Bituminous Pavement	Paved With Concrete Pavement	Oiled Rock or Gravel Surfacing	Unoiled Rock or Gravel Surfacing	Improved Earth Roads	Unimproved Earth Roads
Baker	3,622.0				87.0	35.0	3,500.0
Benton	480.0				384.0	1.0	95.0
Clackamas	1,486.6	108.3	84.0	55.9	589.5	18.2	630.7
Clatsop	245.6	6.6	34.3		110.4	17.1	77.2
Columbia	843.0	2.4	3.4	5.2	315.0	100.0	417.0
Coos	893.8				544.5	142.9	206.4
Crook	1,145.0				70.0	155.0	920.0
Curry	125.0				25.0	4.0	96.0
Deschutes	1,796.8	0.1			2.9	119.8	1,674.0
Douglas	1,049.0	0.4	6.3	1.7	870.6	40.0	130.0
Gilliam	651.0				63.0	99.0	489.0
Grant	880.0				64.0	28.0	788.0
Harney	2,400.0				79.3	249.7	2,071.0
Hood River	297.0		8.5		155.5	67.0	66.0
Jackson	981.0	8.5		11.9	404.1	369.2	187.3
Jefferson	1,900.0				27.0	40.0	1,833.0
Josephine	420.6			1.6	53.0	246.0	120.0
Klamath	1,694.1			13.6	205.5	71.0	1,404.0
Lake	1,800.0				47.0	88.0	1,665.0
Lane	1,413.8			136.8	293.3	289.4	694.3
Lincoln	607.8				169.3	27.0	411.5
Linn	1,224.2			24.2	860.0		340.0
Malheur	1,571.9			11.3	109.7	573.7	877.2
Marion	1,415.0	176.0			710.0	336.0	193.0
Morrow	1,180.0				105.0	45.0	1,030.0
Multnomah	* 491.0	36.0	11.0	315.0		4.0	125.0
Polk	530.5	2.5		6.0	458.0	44.0	20.0
Sherman	543.9				96.4	187.5	260.0
Tillamook	269.8		2.7		118.8	3.6	144.7
Umatilla	3,781.6			15.6	176.0	510.0	3,080.0
Union	1,420.0				245.0	475.0	700.0
Wallowa	1,219.7				91.5	44.7	1,083.5
Wasco	1,532.7	5.0		14.0	193.3	745.5	574.9
Washington	1,350.0	3.9		65.7	870.0	290.4	120.0
Wheeler	500.0				28.1	32.6	439.3
Yamhill	1,275.0	0.5	7.0		520.5	540.0	207.0
Totals	43,037.4	350.2	157.2	678.5	9,142.2	6,039.3	26,670.0

* In addition to the mileages here shown, Multnomah County has constructed and is maintaining approximately 63 miles of bituminous pavement and 8 miles of concrete pavement which are on state highway routes and which are included in the adjacent table of state highway mileages.

TABLE No. 18

STATE HIGHWAYS

LENGTHS, AND MILEAGES OF DIFFERENT TYPES OF IMPROVEMENT

The mileages given in this table are inclusive of mileages within cities and towns.

Hwy. No.	Highway	Total Mileage of State Highways	Miles of Different Types of Improvement						
			Paved With Bituminous Pavement	Paved With Concrete Pavement	Bituminous Macadam Surfacing	Oiled Rock or Gravel Surfacing	Unoiled Rock or Gravel Surfacing	Graded to State Standards	Not Graded to State Standards
1	Pacific	353.7	276.2	75.2	0.6	1.7	....	....	....
2	Columbia River	336.3	188.5	12.4	20.1	115.3	....	....	....
3	West Side Pacific	112.2	64.1	47.7	0.4	....	....	....	....
4	The Dalles-Calif.	317.2	5.5	3.7	17.5	277.7	12.8	....	....
5	John Day	293.2	0.1	....	....	94.6	198.5	....	....
6	Old Oregon Trail	208.0	10.4	1.0	22.9	170.2	3.5	....	....
7	Central Oregon	258.0	0.3	....	3.9	32.9	18.7	112.0	90.2
8	Oregon-Washington	145.3	38.3	....	....	68.1	38.9	....	....
9	Roosevelt Coast	395.2	30.8	27.0	59.9	136.8	83.8	32.7	* 24.2
10	Wallowa Lake	73.2	3.3	....	13.1	12.5	44.3	....	....
11	Enterprise-Flora	35.0	....	....	....	....	35.0	....	....
12	Baker-Cornucopia	75.6	0.3	....	....	....	41.9	27.0	6.4
13	Baker-Unity	46.2	....	....	....	20.7	25.5	....	....
14	Crooked River	40.8	....	....	....	....	....	37.7	3.1
15	McKenzie	112.6	0.5	0.2	4.9	35.8	52.7	7.6	10.9
16	Santiam	103.5	0.8	....	....	13.9	17.7	28.0	43.1
17	McKenzie-Bend	17.4	....	....	....	17.4	....	....	....
18	Willamette	99.0	....	....	....	8.1	9.2	7.0	74.7
19	Fremont	158.8	....	....	0.8	9.5	61.6	78.6	8.3
20	Klamath Falls-Lakeview	92.0	....	0.1	16.6	4.5	70.8	....	....
21	Green Springs	57.1	0.6	....	12.6	18.5	25.4	....	....
22	Crater Lake	92.8	0.4	....	70.2	22.2	....	....	....
23	Dairy-Bonanza	6.7	....	....	....	....	6.7	....	....
24	Burns-Crane	25.2	....	....	....	....	25.2	....	....
25	Redwood	42.5	....	....	10.8	31.7	....	....	....
26	Mt. Hood	103.8	19.0	6.1	21.8	56.9	....	....	....
27	Alsea	59.0	....	....	3.2	23.5	32.3	....	....
28	Pendleton-John Day	99.1	....	....	....	....	26.0	32.0	41.1
29	Tualatin Valley	47.0	14.7	32.3	....	....	....	....	....
30	Salem-Dallas	14.9	14.9	....	....	....	....	....	....
31	Albany-Corvallis	10.5	0.4	10.1	....	....	....	....	....
32	McMinnville-Tillamook	48.7	9.0	4.0	10.8	24.5	0.4	....	....
33	Corvallis-Newport	57.7	0.4	....	8.7	31.5	17.1	....	....
34	Siuslaw	67.0	....	....	....	27.6	16.2	6.3	16.9
35	Coos Bay-Roseburg	61.8	0.3	0.1	9.0	52.4	....	....	....
36	Pendleton-Cold Springs	30.4	....	....	....	....	29.4	....	1.0
37	Umatilla Cut-off	19.8	....	....	....	....	....	....	19.8
38	Oregon Caves	19.1	....	....	....	2.5	9.3	7.3	....
40	Bertha-Beaverton	5.3	2.4	2.9	....	....	....	....	....
41	Ochoco	104.9	....	....	....	19.5	60.3	25.1	....
42	Sherman	69.0	....	....	15.9	33.0	20.1	....	....
43	Monmouth-Independence	2.6	2.6	....	....	....	....	....	....
44	Wapinitia	40.6	....	....	....	7.4	25.8	7.4	....
	Totals	4,358.7	683.8	222.8	323.7	1,370.9	1,009.1	408.7	* 339.7

* Includes 3.57 miles of ferry crossings of streams on the Roosevelt Coast Highway.

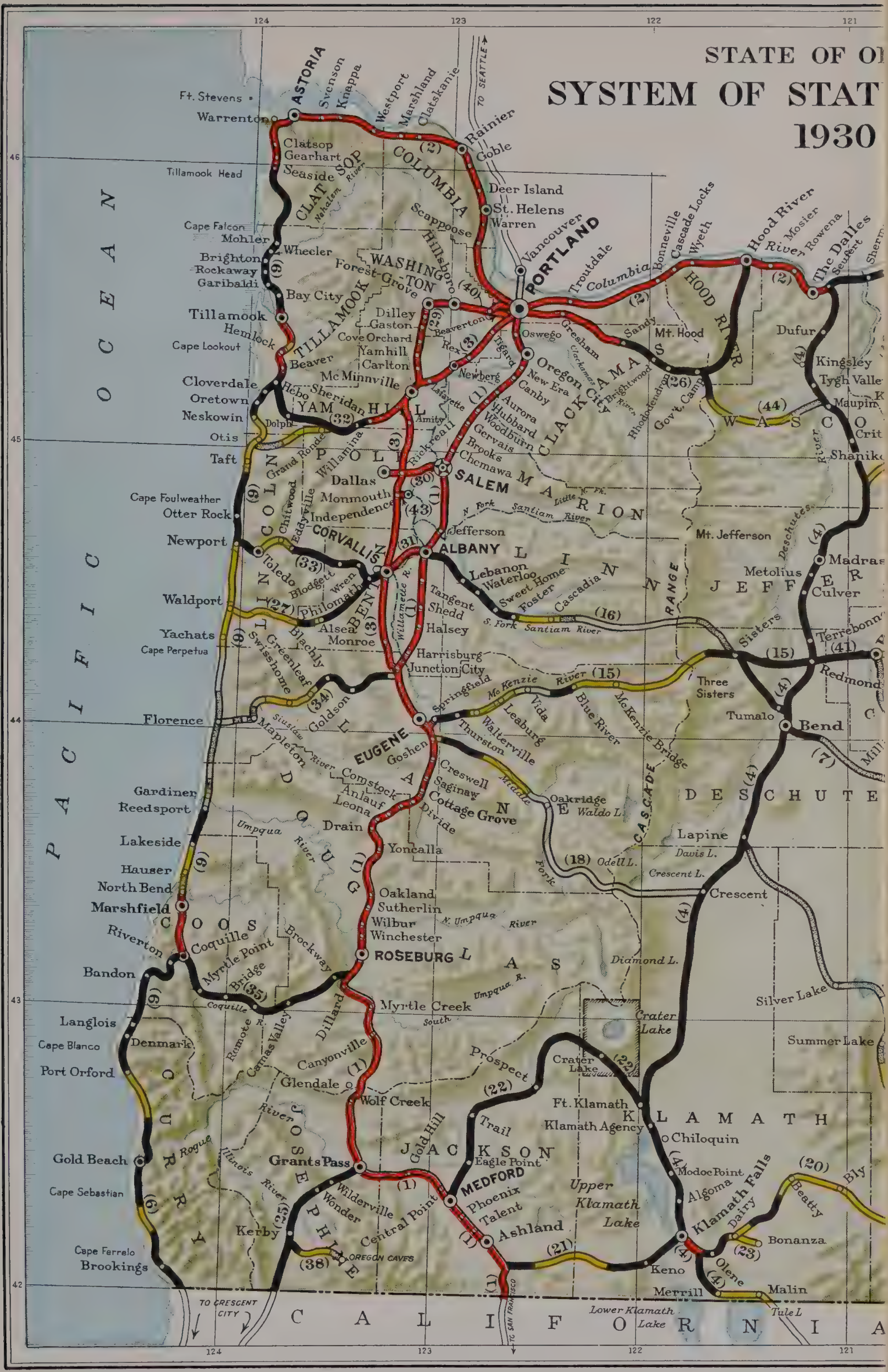
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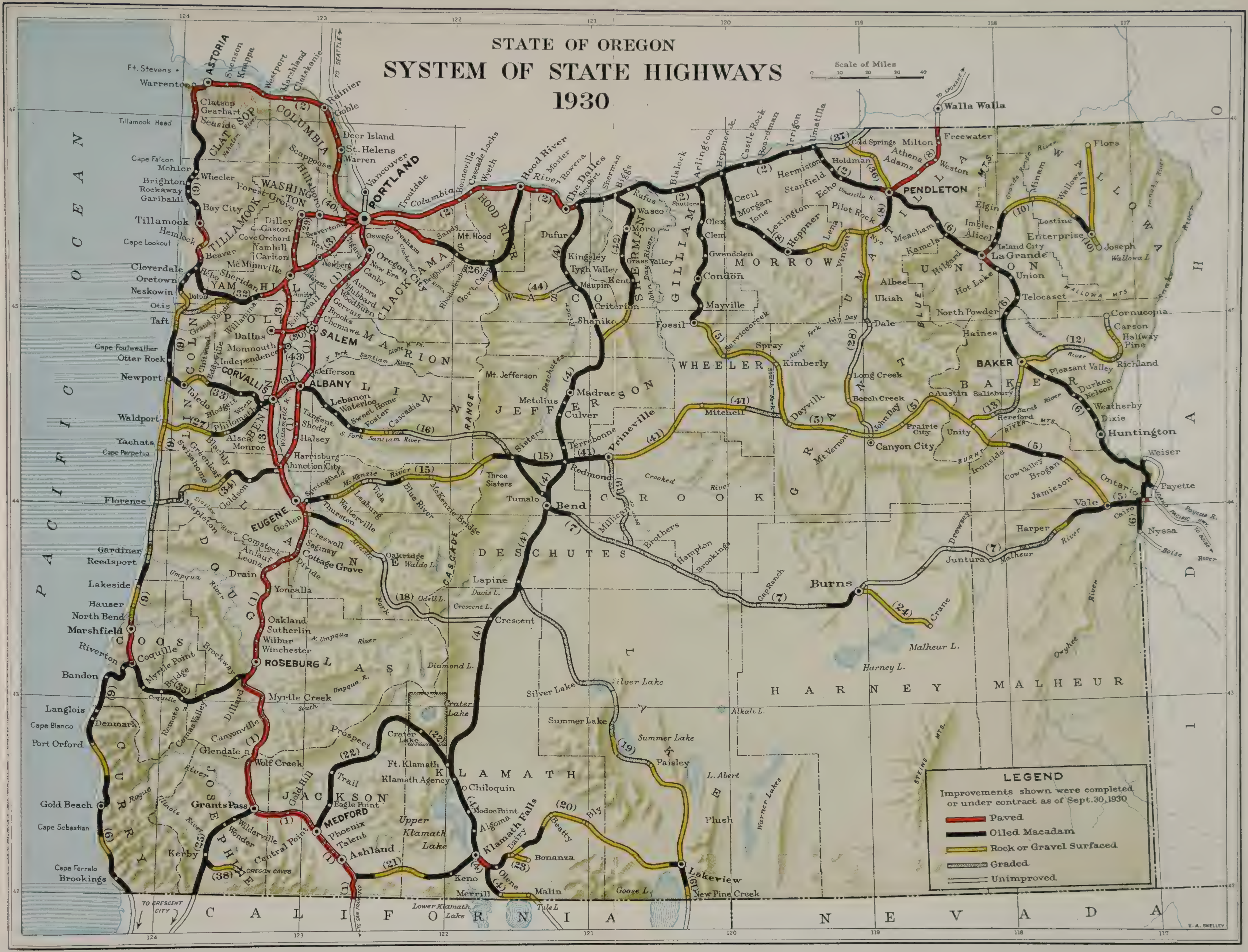
TABLE No. 18

STATE HIGHWAYS
LENGTHS, AND MILEAGES OF DIFFERENT TYPES OF IMPROVEMENT

The mileages given in this table are inclusive of mileages within cities and towns.

Hwy. No.	Highway	Total Mileage of State Highways	Miles of Different Types of Improvement						
			Paved With Bituminous Pavement	Paved With Concrete Pavement	Bituminous Macadam Surfacing	Oiled Rock or Gravel Surfacing	Unoiled Rock or Gravel Surfacing	Graded to State Standards	Not Graded to State Standards
1	Pacific	353.7	276.2	75.2	0.6	1.7	....	....	....
2	Columbia River	336.3	188.5	12.4	20.1	115.3	....	....	....
3	West Side Pacific	112.2	64.1	47.7	0.4	....	....	....	....
4	The Dalles-Calif.	317.2	5.5	3.7	17.5	277.7	12.8	....	....
5	John Day	293.2	0.1	....	....	94.6	198.5	....	....
6	Old Oregon Trail	208.0	10.4	1.0	22.9	170.2	3.5	....	....
7	Central Oregon	258.0	0.3	....	3.9	32.9	18.7	112.0	90.2
8	Oregon-Washington	145.3	38.3	....	....	68.1	38.9	....	....
9	Roosevelt Coast	395.2	30.8	27.0	59.9	136.8	83.8	32.7	* 24.2
10	Wallowa Lake	73.2	3.3	....	13.1	12.5	44.3	....	....
11	Enterprise-Flora	35.0	....	....	....	....	35.0	....	....
12	Baker-Cornucopia	75.6	0.3	....	....	....	41.9	27.0	6.4
13	Baker-Unity	46.2	....	....	....	20.7	25.5	....	....
14	Crooked River	40.8	....	....	....	....	....	37.7	3.1
15	McKenzie	112.6	0.5	0.2	4.9	35.8	52.7	7.6	10.9
16	Santiam	103.5	0.8	....	....	13.9	17.7	28.0	43.1
17	McKenzie-Bend	17.4	....	....	....	17.4	....	....	....
18	Willamette	99.0	....	....	....	8.1	9.2	7.0	74.7
19	Fremont	158.8	....	....	0.8	9.5	61.6	78.6	8.3
20	Klamath Falls-Lakeview	92.0	....	0.1	16.6	4.5	70.8	....	....
21	Green Springs	57.1	0.6	....	12.6	18.5	25.4	....	....
22	Crater Lake	92.8	0.4	....	70.2	22.2	....	....	....
23	Dairy-Bonanza	6.7	....	....	....	....	6.7	....	....
24	Burns-Crane	25.2	....	....	....	....	25.2	....	....
25	Redwood	42.5	....	....	10.8	31.7	....	....	....
26	Mt. Hood	103.8	19.0	6.1	21.8	56.9	....	....	....
27	Alsea	59.0	....	....	3.2	23.5	32.3	....	....
28	Pendleton-John Day	99.1	....	....	....	....	26.0	32.0	41.1
29	Tualatin Valley	47.0	14.7	32.3	....	....	....	....	....
30	Salem-Dallas	14.9	14.9	....	....	....	....	....	....
31	Albany-Corvallis	10.5	0.4	10.1	....	....	....	....	....
32	McMinnville-Tillamook	48.7	9.0	4.0	10.8	24.5	0.4	....	....
33	Corvallis-Newport	57.7	0.4	....	8.7	31.5	17.1	....	....
34	Siuslaw	67.0	....	....	....	27.6	16.2	6.3	16.9
35	Coos Bay-Roseburg	61.8	0.3	0.1	9.0	52.4	....	....	....
36	Pendleton-Cold Springs	30.4	....	....	....	....	29.4	....	1.0
37	Umatilla Cut-off	19.8	....	....	....	....	....	....	19.8
38	Oregon Caves	19.1	....	....	....	2.5	9.3	7.3	....
40	Bertha-Beaverton	5.3	2.4	2.9	....	....	....	....	....
41	Ochoco	104.9	....	....	....	19.5	60.3	25.1	....
42	Sherman	69.0	....	....	15.9	33.0	20.1	....	....
43	Monmouth-Independence	2.6	2.6	....	....	....	....	....	....
44	Wapinitia	40.6	....	....	....	7.4	25.8	7.4	....
	Totals	4,358.7	683.8	222.8	323.7	1,370.9	1,009.1	408.7	* 339.7

* Includes 3.57 miles of ferry crossings of streams on the Roosevelt Coast Highway.



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SYSTEM OF STATE HIGHWAYS
1930

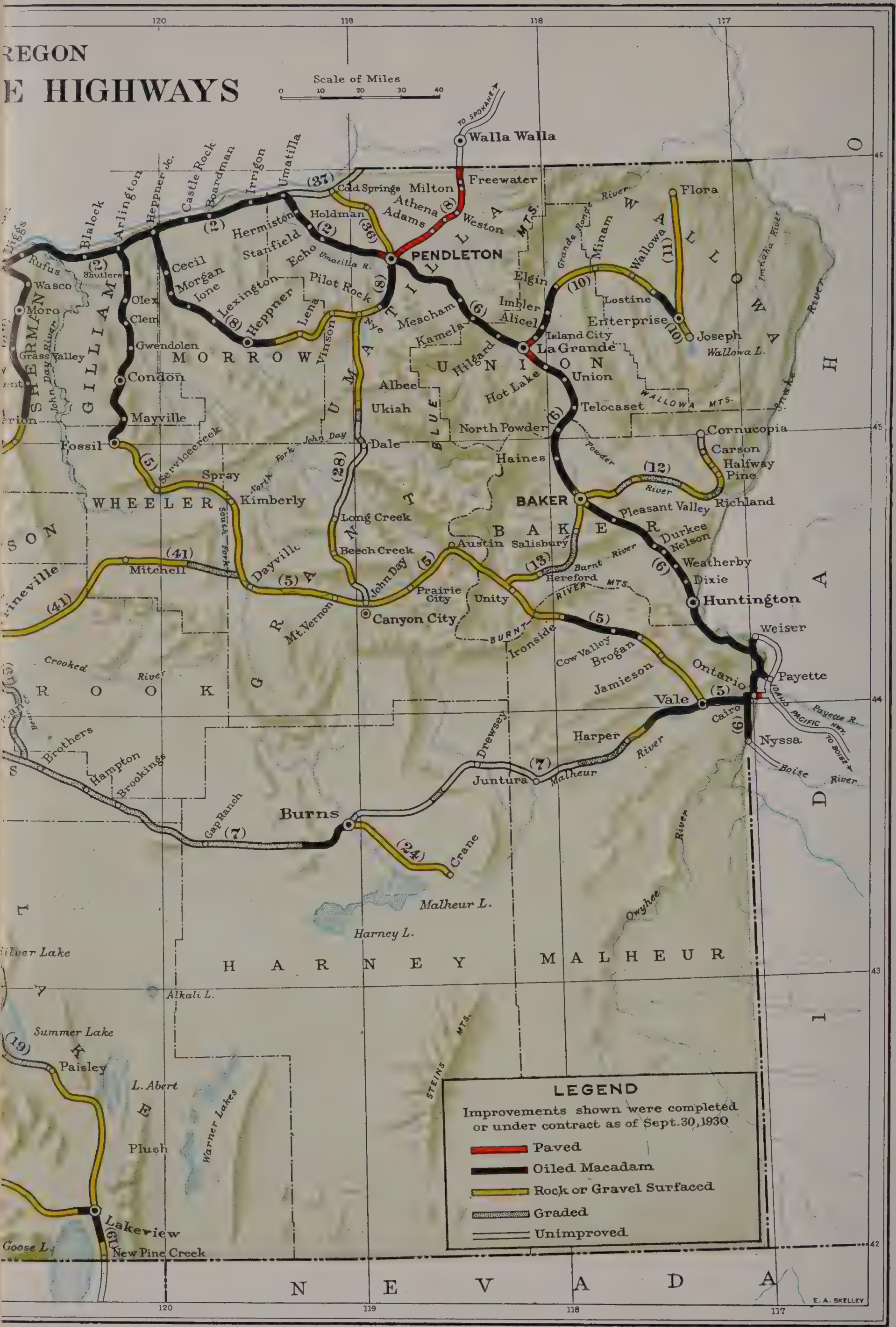
REGON
E HIGHWAYS
Scale of Miles
0 10 20 30 40
LEGEND
Improvements shown were completed or under contract as of Sept. 30, 1930
Paved
Oiled Macadam
Rock or Gravel Surfaced
Graded
Unimproved
120
119
118
117
46
45
44
43
42
TO SPOKANE
Walla Walla
Freewater
Milton
Cold Springs
Athena
Weston
Adams
Holdman
PENDLETON
Umatilla
Irrigon
Boardman
Castle Rock
Heppner Jc.
Arlington
Blalock
Rufus
Wasco
Moro
Grass Valley
Shutlers
Olex
Clem
Gwendolen
Condon
Mayville
Fossil
Cecil
Morgan
Ione
Lexington
Heppner
Hermiston
Stanfield
Echo
Pilot Rock
Lena
Vinson
Nye
Meacham
Kamela
Hilgard
Elgin
Imbler
Alicel
Island City
La Grande
Union
Hot Lake
Telocaset
North Powder
Haines
BAKER
Pleasant Valley
Richland
Halfway
Pine
Carson
Cornucopia
Durkee
Nelson
Weatherby
Dixie
Huntington
Weiser
Payette
Ontario
Vale
Cairo
Nyssa
Harper
Jamieson
Brogan
Cow Valley
Ironside
Unity
Hereford
Salisbury
Austin
Prairie City
John Day
Canyon City
Mt. Vernon
Dayville
Kimberly
Spray
Servicecreek
Mitchell
Long Creek
Beech Creek
Dale
Ukiah
Albee
Minam
Wallowa
Lostine
Enterprise
Joseph
Flora
Wallowa L.
Juntura
Drewsey
Burns
Crane
Gap Ranch
Brothers
Hampton
Brookings
Malheur L.
Harney L.
Alkali L.
Summer Lake
Paisley
L. Abert
Plush
Warner Lakes
Lakeview
New Pine Creek
Goose L.
Silver Lake
rineville
SHERMAN
GILLIAM
MORROW
UMATILLA
UNION
WALLOWA
BAKER
WHEELER
GRANT
CROOK
HARNEY
MALHEUR
LAKE
IDAHO
NEVADA
BLUE MTS.
WALLOWA MTS.
STEINS MTS.
Snake River
Grande Ronde River
Imnaha River
John Day River
Powder River
Burnt River
Malheur River
Owyhee River
Crooked River
Umatilla R.
Payette R.
Boise River
IDAHO PACIFIC HWY.
TO BOISE
E. A. SKELLEY

TABLE No. 19

CONTINUING STATEMENT OF EQUIPMENT AND SUPPLIES ACCOUNT, December 1, 1917, to September 30, 1930

In this table are summarized the disbursements and credits entering into the State Equipment and Supplies Account since the commencement of the operation of the State Equipment Department. The difference between the total of the disbursements and the total of the credits (which difference is shown in the column headed "Total Net Cost, 1917 to End of Period") represents the net cost to the state of all equipment and supplies on hand (including shops and warehouses), the value of which is shown in the column headed "Inventory Value of Equipment and Supplies on Hand."

Period	Gross Expense	Total Credits	Net Cost for the Period	Total Net Cost 1917 to End of Period	Inventory Value of Equipment and Supplies on Hand
1917-1918	$ 111,547.03	$ 24,829.48	$ 86,717.55	$ 86,717.55	$ 100,000.00
1919-1920	602,230.22	308,629.62	293,600.60	380,318.15	*1,500,000.00
1921	403,500.21	476,502.73	‡ 73,002.52	307,315.63	† 825,000.00
1922	357,921.30	387,873.24	‡ 29,951.94	277,363.69	759,325.00
1923	487,118.10	575,851.80	‡ 88,733.70	188,629.99	993,769.89
1924	615,373.69	670,141.27	‡ 54,767.58	133,862.41	970,267.20
1925	834,605.68	867,512.23	‡ 32,906.55	100,955.86	1,012,692.68
1926	973,318.39	1,005,373.79	‡ 32,055.40	68,900.46	1,205,984.66
1927	1,334,662.44	1,219,523.85	115,138.59	184,039.05	1,371,859.56
1928	1,490,729.47	1,560,944.88	‡ 70,215.41	113,823.64	1,369,358.66
1929	1,924,506.77	1,596,388.93	328,117.84	441,941.48	1,647,148.58
1930 (to Sept. 30)	1,119,550.97	1,162,321.75	‡ 42,770.78	399,170.70	1,428,082.54
1917 to 1930	$10,255,064.27	$9,855,893.57	$399,170.70	$399,170.70	$1,428,082.54

---

* During 1919 and 1920, the state received from the federal government a large amount of surplus war equipment (trucks, tractors, etc.). The inventory value of this equipment was greatly in excess of its cost to the state.

† During 1921, much of the surplus war equipment received from the federal government in 1919 and 1920 was turned over to the counties. This accounts for the large decrease in the inventory value of equipment on hand.

‡ Credit.

TABLE No. 20

CONDENSED INVENTORY OF EQUIPMENT, SHOPS AND WAREHOUSES, September 30, 1930

Maintenance and Construction Equipment	$928,750.00	
		$ 928,750.00
Salem Plant:		
Shop and Warehouse Buildings	$ 63,919.94	
Shop and Warehouse Equipment and Tools	29,816.00	
Stock Materials, Supplies and Repair Parts	137,450.56	
		231,186.50
La Grande Plant:		
Shop and Warehouse Buildings	$ 50,690.27	
Shop and Warehouse Equipment and Tools	19,919.98	
Stock Materials, Supplies and Repair Parts	39,283.06	
Shop Site	27,163.66	
		137,056.97
Klamath Falls Plant:		
Shop and Warehouse Buildings	$ 26,228.14	
Shop and Warehouse Equipment and Tools	18,447.15	
Stock Materials, Supplies and Repair Parts	25,067.29	
Shop Site	6,615.00	
		76,357.58
Coquille Plant:		
Shop and Warehouse Buildings	$ 19,117.17	
Shop and Warehouse Equipment and Tools	9,415.23	
Stock Materials, Supplies and Repair Parts	17,749.09	
Shop Site	8,450.00	
		54,731.49
Total inventory value		$1,428,082.54

TABLE No. 21

RECORD OF EQUIPMENT ACQUIRED, EQUIPMENT DISPOSED OF AND EQUIPMENT ON HAND

Period November 1, 1928, to September 30, 1930

This table gives inventories of the heavy construction and maintenance equipment owned by the State Highway Department as of November 1, 1928, and as of September 30, 1930. It also gives an accounting for all heavy equipment acquired or disposed of during the two-year period between those dates.

Description	Number on Hand November 1, 1928	Number Purchased 1929-1930	Number Converted from Other Equipment, 1929-1930	Total	Allotted and/or Sold to Cities, Counties, State Institutions and Others	Disposed of as Obsolete, Unserviceable, and/or Unsuitable, 1929-1930	Converted to Other Type of Equipment, 1929-1930	Number on Hand September 30, 1930
Trucks								
Chevrolet, 1 ton	50	68	......	118	......	......	......	118
Coleman, 2 ton	......	6	......	6	......	......	......	6
Ford, 1 ton	59	81	......	140	2	23	......	115
F. W. D., 2 ton	5	34	......	39	......	......	......	39
F. W. D. (Govt.), 3 ton	38	......	......	38	......	34	......	4
F. W. D., 3½ ton	1	......	......	1	......	......	......	1
F. W. D., 5 ton	......	4	......	4	......	......	......	4
F. W. D., 6 ton	......	6	......	6	......	......	......	6
Federal, 2 ton	......	6	......	6	......	......	......	6
Federal, 2 ton	......	6	......	6	......	......	......	6
G. M. C. (Govt.), 1 ton	5	......	......	5	......	5	......	......
G. M. C., 1 ton	1	......	......	1	......	......	......	1
G. M. C., 2 ton	......	7	......	7	......	......	......	7
Graham (Dodge), 1 ton	1	......	......	1	1	......	......	......
Graham (Dodge), 1½ ton	4	......	......	4	......	......	......	4
Heavy Aviation, 3 ton	3	......	......	3	......	2	......	1
Indiana, 5 ton	1	......	......	1	......	......	......	1
Liberty, 3 ton	56	......	......	56	......	......	......	56
Moreland, 2 ton	......	3	......	3	......	......	......	3
Moreland, 4 ton	3	......	......	3	......	3	......	......
Nash Quad, 2 ton	37	......	......	37	3	25	......	9
Packard, 1½ ton	24	......	......	24	1	14	......	9
Packard, 3 ton	1	......	......	1	......	1	......	......
Pierce Arrow, 2 ton	7	......	......	7	......	6	......	1
Pierce Arrow, 5 ton	11	......	......	11	......	8	......	3
Riker, 3 ton	1	......	......	1	......	......	......	1
Standard, 3½ ton	8	......	......	8	......	2	......	6
White Staff, 1 ton	2	......	......	2	......	1	......	1
White, 1 ½ ton	30	......	......	30	2	24	......	4
Totals	348	221	......	569	9	148	......	412
Motorcycles								
Harley Davidson	8	5	......	13	13	......	......	......
Indian Scout	1	......	......	1	1	......	......	......
Totals	9	5	......	14	14	......	......	......

TABLE No. 21—Continued

Description	Number on Hand November 1, 1928	Number Purchased 1929-1930	Number Converted from Other Equipment, 1929-1930	Total	Allotted and/or Sold to Cities, Counties, State Institutions and Others	Disposed of as Obsolete, Unserviceable, and/or Unsuitable, 1929-1930	Converted to Other Type of Equipment, 1929-1930	Number on Hand September 30, 1930
Tractors								
Caterpillar, 2 ton	2	......	......	2	......	......	......	2
Caterpillar "20"	......	1	......	1	......	......	......	1
Caterpillar Snow Special	1	4	......	5	......	......	......	5
Fordson	23	......	......	23	......	7	......	16
Holt, 2½ ton	3	......	......	3	......	2	......	1
Holt, 5 ton	17	......	......	17	......	14	......	3
Holt, 10 ton	5	......	......	5	......	4	......	1
Holt, 20 ton	1	......	......	1	......	1	......	......
McCormick-Deering	35	36	......	71	......	......	......	71
Totals	87	41	......	128	......	28	......	100
Automobiles								
Buick Touring	3	......	......	3	3	......	......	......
Buick Sedan	3	2	......	5	......	......	......	5
Buick Roadster	4	......	......	4	4	......	......	......
Buick Coupe	12	7	......	19	14	......	......	5
Cadillac Touring	1	......	......	1	1	......	......	......
Cadillac Light Delivery	1	......	......	1	1	......	......	......
Chevrolet Touring	4	......	......	4	......	......	......	4
Chevrolet Coupe	......	4	......	4	......	......	......	4
Chevrolet Light Delivery	......	1	......	1	......	......	......	1
Chevrolet Coach	......	9	......	9	......	......	......	9
Chrysler Sedan	......	1	......	1	......	......	......	1
Dodge Touring	2	......	......	2	2	......	......	......
Dodge Roadster	4	......	......	4	4	......	......	......
Dodge Coupe	6	3	......	9	1	......	......	8
Essex Sedan	......	1	......	1	......	......	......	1
Ford Touring	48	......	......	48	12	9	2	25
Ford Light Delivery	15	38	2	55	......	14	......	41
Ford Roadster, Del. body	9	......	......	9	3	1	......	5
Ford Coupe	1	7	......	8	6	......	......	2
Ford Sedan	......	39	......	39	......	......	......	39
Graham-Paige Coach	......	1	......	1	......	......	......	1
Graham-Paige Coupe	......	1	......	1	......	......	......	1
Marquette Coupe	......	1	......	1	......	......	......	1
Oakland Coach	2	......	......	2	1	......	......	1
Oakland Coupe	2	......	......	2	1	......	......	1
Oldsmobile Coupe	2	3	......	5	......	......	......	5
Packard Sedan	......	1	......	1	......	......	......	1
Reo Sedan	......	1	......	1	......	......	......	1
Studebaker Roadster	1	......	......	1	1	......	......	......
Studebaker Sedan	......	2	......	2	......	......	......	2
Studebaker Coupe	......	2	......	2	2	......	......	......
Totals	120	124	2	246	56	24	2	164

TABLE No. 21—Continued

Description	Number on Hand November 1, 1928	Number Purchased 1929-1930	Number Converted from Other Equipment, 1929-1930	Total	Allotted and/or Sold to Cities, Counties, State Institutions and Others	Disposed of as Obsolete, Unserviceable, and/or Unsuitable, 1929-1930	Converted to Other Type of Equipment, 1929-1930	Number on Hand September 30, 1930
Engineering Equipment								
Transits	90	......	......	90	8	......	......	82
Levels	66	......	......	66	8	2	......	56
Miscellaneous Equipment								
Air Compressors	4	5	1	10	......	......	......	10
Asphalt Kettles	18	44	......	62	33	......	......	29
Buckets	4	1	1	6	......	2	......	4
Boilers	19	......	......	19	1	......	......	18
Conveyor Belt	1	......	......	1	......	......	......	1
Crane	1	......	......	1	......	......	......	1
Drag Line	1	......	......	1	......	......	......	1
Drills	2	......	......	2	......	......	......	2
Gas Service Stations	4	......	1	5	......	......	......	5
Graders	121	41	......	162	47	9	......	106
Hoists	4	......	......	4	......	......	......	4
Hydraulic Dirt Removers	......	3	......	3	......	......	......	3
Hydraulic Jacks and Jackhammers	17	5	2	24	1	......	......	23
Loaders	11	......	......	11	......	......	......	11
Maintainers	7	......	......	7	......	......	......	7
Mixers, Asphalt	2	......	......	2	......	......	2	......
Mixers, Concrete	1	......	1	2	......	......	......	2
Portable Paving Plants	2	2	5	9	......	2	1	6
Power Plants	4	1	......	5	2	1	2	......
Pump Units	33	1	......	34	......	16	......	18
Retorts	9	......	......	9	2	......	......	7
Ripper, Killifer	......	1	......	1	......	......	......	1
Road Magnet	1	......	......	1	......	......	......	1
Road Rollers	5	10	......	15	2	......	......	13
Sand Spreaders	3	......	......	3	......	......	......	3
Shovels, Gas	3	7	......	10	2	......	......	8
Snow Plows (Tractor Moldboard)	15	2	3	20	......	......	1	19
Snow Plows (Tractor Rotary)	4	......	......	4	......	......	......	4
Snow Plows (Truck Moldboard)	51	17	1	69	......	5	3	61
Snow Plows (Truck Rotary)	3	3	......	6	......	......	......	6
Snow Plows (Grader Attachment)	8	......	......	8	......	......	......	8
Snogo	......	5	......	5	......	......	......	5
Street Burners	5	......	......	5	......	......	......	5
Street Sweepers	11	6	......	17	......	......	......	17
Traffic Markers	2	1	......	3	......	......	......	3
Trailers	64	33	......	97	3	......	4	90
Tool Heaters	2	......	......	2	......	......	......	2
Wood Saws	1	......	......	1	......	......	......	1

TABLE No. 22

STATISTICS PERTAINING TO MOTOR VEHICLE REGISTRATIONS AND TO REVENUES FROM MOTOR VEHICLE LICENSE FEES AND FROM THE TAX ON GASOLINE

In arriving at the number of persons per registered vehicle, it has been assumed that the population of the state has increased at a uniform annual rate equal to one-tenth of the total increase in population between 1910 and 1920, and between 1920 and 1930.

Year	Number of Motor-cycles	Number of Motor Vehicles Other Than Motorcycles				Number of Persons Per Motor Vehicle	License Fee Revenues		Gasoline Tax Revenues	
		Passenger and Light Delivery Cars	Busses and Stages	Trucks and Trailers	Total of Motor Vehicles Except Motor-cycles		Total Gross Revenue	Average Per Motor Vehicle Including Trucks and Busses	Total Gross Revenue	Average Per Motor Vehicle
1913*	2,100	....	....	....	11,857	59.54	$ 56,873.00	$ 4.80	$	$ ....
1914	2,898	....	....	....	16,347	43.86	77,592.00	4.75	....	....
1915	3,158	....	....	....	23,585	30.87	108,881.50	4.62	....	....
1916	3,368	....	....	....	33,917	21.79	146,232.00	4.31	....	....
1917	3,400	....	....	....	48,632	15.43	196,787.50	4.05	....	....
1918	3,501	....	....	....	63,324	12.02	461,422.00	7.29	....	....
1919	3,570	....	....	....	83,332	9.28	602,239.00	7.23	290,795.49	3.49
1920	3,518	....	....	....	103,790	7.55	2,085,168.50	20.09	443,375.01	4.27
1921	3,164	109,085	103	9,427	118,615	6.76	2,334,931.25	19.68	988,247.27	8.33
1922	3,206	122,902	592	11,072	134,566	6.11	3,340,519.58	24.82	1,147,556.40	8.53
1923	3,140	152,216	840	13,356	166,412	5.06	4,069,609.40	24.46	1,892,013.27	11.37
1924	2,765	176,666	906	15,057	192,629	4.95	4,766,453.90	24.74	2,570,653.62	13.34
1925	2,547	198,615	953	16,985	216,553	4.07	5,370,201.78	24.79	2,909,095.05	13.43
1926	2,215	214,926	973	18,235	234,134	3.85	6,017,759.49	25.70	3,319,111.03	14.18
1927	2,030	223,816	925	20,964	245,705	3.75	6,527,340.93	26.57	3,643,190.93	14.83
1928	2,012	231,494	969	21,952	254,415	3.69	6,960,220.87	27.39	3,984,308.98	15.66
1929	1,796	247,577	1,037	24,656	273,270	3.54	7,644,226.07	27.97	4,455,908.65	16.31
1930†	1,406	235,351	840	20,657	256,848	†........	2,967,792.46	†........	3,134,915.56	†........

* Division between motor vehicles and motorcycles is estimated, as separate records are not available.

† The figures given for the year 1930 cover only the six-month period from January 1 to June 30. The average persons per vehicle and average revenue per vehicle are not shown for this period due to the fact that the figures would not be comparable with the above full year periods.

TABLE No. 23

MILEAGES OF WORK PERFORMED

December 1, 1928, to December 31, 1930

This table shows by sections and by mileage the highway construction work, reconstruction work, and betterment work performed on the state highway system under the direct supervision of the State Highway Commission during the period from December 1, 1928, to December 31, 1930. It does not include forest highway work, which work is performed under the supervision of the United States Bureau of Public Roads. Neither does it include work performed by county forces or work performed under county contracts.

County and Section	Mileages							
	Paving	Rock and Gravel Surfacing	Grading	Bituminous Macadam Surface	Non-skid Treatment of Pavement	Oiling	Reconstruction of Rock Surfacing	Regrading and Roadbed Widening
BAKER COUNTY								
Haines-North	....	....	....	....	....	....	....	1.06
Haines-Baker	....	....	....	....	....	....	4.21	5.70
Baker-Pleasant Valley	....	....	....	9.41	....	....	9.41	8.60
Pleasant Valley-Durkee	....	....	....	....	....	....	12.40	12.40
Quartz Station, Revision	....	....	....	....	....	....	....	0.81
Middle Bridge-Black Bridge	....	....	....	....	....	....	....	4.00
Totals for Baker County	....	....	....	9.41	....	....	26.02	32.57
BENTON COUNTY								
Blodgett-Gellatly Point	....	....	....	1.50	....	....	....	....
West Unit, Corvallis-Klines Mill	....	....	....	....	....	....	1.50	....
East Unit, Corvallis-Klines Mill	....	....	....	....	....	....	3.50	....
Lincoln County Line-Alsea	....	....	....	....	....	....	4.14	....
Missouri-Bend Section	....	....	....	3.19	....	4.92	....	....
Alsea-Philomath	....	....	....	....	....	18.60	....	....
Philomath-Corvallis	....	....	....	3.91	....	....	....	....
Polk County Line-Corvallis	....	....	....	....	5.29	....	....	....
Totals for Benton County	....	....	....	8.60	5.29	23.52	9.14	....

CLACKAMAS COUNTY								
Multnomah County Line-Oswego	....	....	....	....	....	....	....	0.92
Canemah-New Era	4.40	....	....	0.25	....	....	0.76	0.17
New Era-Pudding River	....	....	....	....	3.25	....	....	....
Multnomah County Line-Sandy	6.13	....	....	....	....	....	....	....
Rhododendron-Government Camp	....	....	....	....	....	....	10.38	....
Salmon River Bridge Approaches	....	....	....	....	....	....	....	0.10
Wapinitia Junction-Wasco County Line	....	....	....	....	....	4.82	....	....
Totals for Clackamas County	10.53	....	....	0.25	3.25	4.82	11.14	1.19
CLATSOP COUNTY								
Astoria-Svensen (pavement gaps)	....	....	....	0.20	....	....	....	....
Rock Creek-Big Noise Creek	....	....	....	....	....	....	....	0.79
Big Noise Creek-Gnat Creek	....	....	....	....	....	....	....	2.19
Svenson-Columbia County Line	....	....	....	....	13.95	....	....	....
Miles Crossing-Seaside	....	....	....	....	14.22	....	....	....
Wahanna Creek Bridge Approaches	....	....	....	....	....	....	....	0.10
Necanicum River Bridge Approaches	....	....	....	....	....	....	....	0.97
Cannon Beach Junction-Nehalem Summit	....	....	....	13.16	....	....	....	....
Hamlet Junction-Tillamook County Line	....	....	....	....	....	10.67	....	....
Totals for Clatsop County	....	....	....	13.36	28.17	10.67	....	4.05
COLUMBIA COUNTY								
St. Helens Section	....	....	....	....	....	....	....	0.82
Clatsop County Line-Multnomah County Line	....	....	....	....	49.33	....	....	....
Totals for Columbia County	....	....	....	....	49.33	....	....	0.82
COOS COUNTY								
Douglas County Line-Lakeside	....	....	....	....	....	3.05	....	....
Lakeside Undercrossing	....	....	0.37	....	....	....	....	....
Haynes Slough, Larson Slough and Russell Point	....	....	1.29	....	....	....	....	....
Cunningham Creek Bridge Approaches	0.23	....	....	....	....	....	0.23	0.23
Coquille-Riverton-Hoffman Bridge	....	....	....	....	....	....	8.40	....
Coquille-Riverton	....	....	....	....	....	6.38	....	....
Riverton-Bandon	....	....	....	....	....	12.36	12.00	....
Bandon-South	....	....	....	....	....	9.05	....	....
Myrtle Point-Douglas County Line	....	....	....	....	....	24.48	....	....
Totals for Coos County	0.23	....	1.66	....	....	55.32	20.63	0.23

TABLE No. 23—Continued

County and Section	Mileages							
	Paving	Rock and Gravel Surfacing	Grading	Bituminous Macadam Surface	Non-skid Treatment of Pavement	Oiling	Reconstruction of Rock Surfacing	Regrading and Roadbed Widening
CROOK COUNTY								
North and South Units, Bear Creek-Millican	......	......	7.70	......	......	......	......	......
Totals for Crook County	......	......	7.70	......	......	......	......	......
CURRY COUNTY								
Coos County Line-Denmark	......	......	......	......	......	4.48	......	......
Denmark-Port Orford	......	......	......	5.51	......	5.41	10.83	9.00
Euchre Creek-California Line	......	......	......	......	......	41.79	......	......
Totals for Curry County	......	......	......	5.51	......	51.68	10.83	9.00
DESCHUTES COUNTY								
Pilot Butte-Horse Ridge	......	1.41	......	......	......	8.00	8.59	10.70
Horse Ridge-Dry River	......	......	8.40	......	......	......	......	......
Dry River-Millican	......	......	6.80	......	......	......	......	......
Hampton-Lake County Line	......	......	14.13	......	......	......	......	......
Forest Boundary-Sisters	......	......	......	......	......	0.80	......	......
Lapine-Klamath County Line	......	......	2.31	......	......	......	......	......
South Unit, Bear Creek-Millican	......	......	1.57	......	......	......	......	......
Totals for Deschutes County	......	1.41	33.21	......	......	8.80	8.59	10.70
DOUGLAS COUNTY								
Myrtle Creek Bridge Approaches	0.20	......	......	......	......	......	0.20	0.20
Tahkenitch-Gardiner Summit	......	......	3.17	......	......	......	......	......
Reedsport-Coos County Line	......	......	......	......	......	9.93	......	......
"L" Street (Reedsport) Section	......	0.47	0.47	......	......	......	......	......
Scottsburg Bridge Approaches	......	......	0.86	......	......	......	......	......
Scottsburg-Burchard Creek	......	......	4.43	......	......	......	......	......
Red Bridge-Drain	......	3.50	10.10	......	......	......	......	......
Coos County Line-Camas Mountain	......	......	......	......	......	14.39	......	......
Totals for Douglas County	0.20	3.97	19.03	......	......	24.32	0.20	0.20
GILLIAM COUNTY								
Condon-Wheeler County Line	......	......	......	......	......	13.62	......	......
Totals for Gilliam County	......	......	......	......	......	13.62	......	......

GRANT COUNTY								
Wheeler County Line-Picture Gorge	....	....	1.60	....	....	....	....	....
Mountain Rest-Little Beech Creek	....	7.18	7.18	....	....	....	....	....
Totals for Grant County	....	7.18	8.78	....	....	....	....	....
HARNEY COUNTY								
Lake County Line-Gap Ranch	....	....	11.34	....	....	....	....	....
Unit "B," Lake County Line-Gap Ranch	....	....	0.17	....	....	....	....	....
Gap Ranch-Silver Creek	....	....	10.11	....	....	....	....	....
Silver Creek-Sage Hen Hill	....	....	7.00	....	....	....	....	....
Sage Hen Hill-Burns	....	13.07	....	0.66	....	12.23	....	....
Hines Mill-Burns	....	....	....	2.74	....	....	2.74	2.74
Totals for Harney County	....	13.07	28.62	3.40	....	12.23	2.74	2.74
HOOD RIVER COUNTY								
Multnomah County Line-Hood River	....	....	....	....	23.31	....	....	....
Totals for Hood River County	....	....	....	....	23.31	....	....	....
JACKSON COUNTY								
Gold Hill-Medford, Revision	0.22	....	....	....	....	....	....	0.22
Medford-Phoenix	5.87	....	....	....	....	....	....	....
Keene Creek-Jenny Creek	....	....	....	....	....	....	6.56	6.56
Jenny Creek-Klamath County Line	....	....	....	....	....	....	4.77	....
Rogue River Bridge-Prospect	....	....	....	....	....	....	0.60	0.60
Prospect-Klamath County Line	....	....	....	20.53	....	....	....	....
Totals for Jackson County	6.09	....	....	20.53	....	....	11.93	7.38
JEFFERSON COUNTY								
Wasco County Line-Trout Creek, Revision	....	....	....	0.13	....	....	0.13	0.13
Totals for Jefferson County	....	....	....	0.13	....	....	0.13	0.13
JOSEPHINE COUNTY								
Deer Creek-Shattuck Corner	....	....	....	10.83	....	6.89	....	....
Totals for Josephine County	....	....	....	10.83	....	6.89	....	....
KLAMATH COUNTY								
Klamath Falls-Lakeview Junction	3.73	....	....	....	....	....	....	3.17
Altamont Canal Bridge Approaches	0.08	....	....	....	....	....	....	....
Klamath Falls-Merrill-Olene	....	....	....	....	....	....	5.50	....
Lakeview Junction-Merrill	....	....	....	13.65	....	14.48	....	....
Deschutes County Line-West Forest Boundary	....	....	9.82	....	....	1.46	....	....

TABLE No. 23—Continued

County and Section	Mileages							
	Paving	Rock and Gravel Surfacing	Grading	Bituminous Macadam Surface	Non-skid Treatment of Pavement	Oiling	Reconstruction of Rock Surfacing	Regrading and Roadbed Widening
KLAMATH COUNTY—Continued								
Lakeview Junction-Bly Mountain	0.11	8.70	8.49	16.61	....	10.00	6.30	....
Beatty-Forest Boundary	....	7.41	....	....	....	....	....	....
Jackson County Line-Klamath Falls	....	....	....	12.62	....	2.05	....	....
Jackson County Line-Keno	....	....	....	....	....	....	22.33	....
Keno-Klamath Falls	....	....	....	....	....	....	0.15	....
Jackson County Line-Crater Lake Park Boundary	....	....	....	1.15	....	....	....	....
Crater Lake Park Boundary-Fort Klamath Junction	....	....	....	....	....	10.20	....	....
Totals for Klamath County	3.92	16.11	18.31	44.03	....	38.19	34.28	3.17
LAKE COUNTY								
Lake County Section, Central Oregon Highway	....	....	14.38	....	....	....	....	....
East Forest Boundary-Silver Lake	....	....	19.77	....	....	....	....	....
Silver Lake-Picture Rock Pass	....	....	10.00	....	....	....	....	....
Ana Springs-Hunter Hill	....	....	7.52	....	....	....	....	....
Lakeview-California Line	....	13.14	5.98	0.81	....	8.01	2.15	....
Lakeview-West	....	0.28	....	....	....	4.51	....	....
Totals for Lake County	....	13.42	57.65	0.81	....	12.52	2.15	....
LANE COUNTY								
Benton County Line-Junction City	....	....	....	....	4.53	....	....	....
Junction City-Eugene	....	....	....	....	12.48	....	....	....
Berry Creek-Sutton Lake	....	....	3.90	....	....	....	....	....
Glenada Section	....	....	1.17	....	....	....	....	....
Glenada-Douglas County Line	....	....	6.00	....	....	....	....	....
Springfield Bridge Approaches	....	0.22	0.22	0.22	....	....	....	....
Springfield-Cogswell Hill	....	7.40	7.40	4.75	....	....	....	....
Hendricks Bridge-Doyle Hill	....	....	6.77	....	....	....	....	....
Nimrod-Belknap Springs	....	....	....	....	....	6.00	11.00	2.50
Gate Creek Bridge Approaches	....	....	0.63	....	....	....	....	....
McKenzie Bridge Approaches	....	....	0.83	....	....	....	....	....
West Unit, Lowell-Goodman Creek	....	....	1.92	....	....	....	....	....
Black Canyon Section	....	....	3.31	....	....	....	....	....
Indian Creek Bridge Approaches	....	....	....	....	....	....	....	0.20
Greenleaf Creek-Cheshire	....	....	....	....	....	27.62	12.30	....
Totals for Lane County	....	7.62	32.15	4.97	17.01	33.62	23.30	2.70

LINCOLN COUNTY								
Tillamook County Line-Otis	....	....	....	....	....	....	3.26	3.26
DeLake-Boiler Bay	....	....	....	....	....	5.79	....	....
Siletz River-Otter Rock	....	....	....	8.35	....	....	....	....
Yaquina Bay-South Beach	....	....	1.00	....	....	....	....	....
Waldport-Yachats	....	....	8.82	....	....	....	....	....
Yachats-Lane County Line	....	....	2.85	....	....	....	....	....
Waldport and Waldport-Lane County Line	....	6.50	....	....	....	....	....	....
Pioneer Mountain-Eddyville	....	....	....	....	....	....	2.00	7.00
Eddyville-Burnt Woods	....	....	....	3.30	....	....	....	....
West Unit, Corvallis-Klines Mill	....	....	....	....	....	....	3.00	....
Totals for Lincoln County	....	6.50	12.67	11.65	....	5.79	8.26	10.26
LINN COUNTY								
Jefferson-Halsey	....	....	....	....	19.60	....	....	....
Tangent-Shedd	....	....	....	....	....	....	....	2.37
Lebanon-Sheas Hill	....	15.24	....	....	....	....	....	....
Lebanon-Foster	....	....	....	17.62	....	....	....	....
Ranger Station-Bryant Hill	....	....	1.87	....	....	....	....	....
Totals for Linn County	....	15.24	1.87	17.62	19.60	....	....	2.37
MALHEUR COUNTY								
R. R. Tunnel-Harper	....	....	5.50	....	....	....	....	....
Harper-Vale	....	15.30	15.30	0.44	....	11.66	7.01	7.01
Ironside-Brogan	....	....	....	....	....	23.85	....	....
Snake River Slides Section	....	....	....	8.00	....	....	8.00	8.00
Weiser Spur and Dead Ox Flat	....	....	....	....	....	....	4.00	8.00
Ontario-Nyssa	....	....	....	....	....	....	3.03	....
Totals for Malheur County	....	15.30	20.80	8.44	....	35.51	22.04	23.01
MARION COUNTY								
Aurora-Salem	....	....	....	....	22.08	....	....	....
Salem-Jefferson	....	....	....	....	6.05	....	....	....
Totals for Marion County	....	....	....	....	28.13	....	....	....
MORROW COUNTY								
Boardman-Umatilla County Line	....	....	....	3.08	....	....	....	....
Heppner-East	....	....	....	....	....	6.53	....	....
Totals for Morrow County	....	....	....	3.08	....	6.53	....	....

TABLE No. 23—Continued

County and Section	Mileages							
	Paving	Rock and Gravel Surfacing	Grading	Bituminous Macadam Surface	Non-skid Treatment of Pavement	Oiling	Reconstruction of Rock Surfacing	Regrading and Roadbed Widening
POLK COUNTY								
Yamhill County Line-Holmes Gap	--------	--------	--------	--------	4.32	--------	--------	--------
Rickreall-Monmouth	--------	--------	--------	--------	5.59	--------	--------	2.80
Luckiamute River Bridge Approaches	0.05	--------	--------	--------	--------	--------	--------	--------
Monmouth-Independence	--------	--------	--------	--------	1.43	--------	--------	--------
Dallas-Salem	--------	--------	--------	--------	13.92	--------	--------	--------
Yamhill County Line-Grande Ronde	--------	6.39	--------	--------	--------	--------	--------	--------
Valley Junction Section	--------	--------	--------	0.85	--------	--------	--------	--------
Totals for Polk County	0.05	6.39	--------	0.85	25.26	--------	--------	2.80
SHERMAN COUNTY								
DeMoss-Grass Valley	--------	--------	--------	15.86	--------	--------	15.60	15.60
Kent-Wasco County Line	--------	--------	--------	--------	--------	5.60	--------	--------
Totals for Sherman County	--------	--------	--------	15.86	--------	5.60	15.60	15.60
TILLAMOOK COUNTY								
Clatsop County Line-Garibaldi	--------	--------	--------	11.88	--------	18.75	--------	--------
Trask River Bridge Section	--------	--------	--------	0.15	--------	--------	--------	--------
Pleasant Valley-Hemlock	--------	--------	--------	0.30	--------	--------	3.00	3.00
Hebo-Neskowin	--------	--------	--------	13.04	--------	--------	--------	--------
Neskowin-Lincoln County Line	--------	--------	--------	--------	--------	--------	7.68	7.68
Hebo-East	--------	--------	--------	0.30	--------	--------	--------	--------
Totals for Tillamook County	--------	--------	--------	25.67	--------	18.75	10.68	10.68
UMATILLA COUNTY								
Morrow County Line-Umatilla	--------	--------	--------	3.52	--------	--------	3.62	3.62
Umatilla-Hermiston	--------	--------	--------	2.30	--------	--------	--------	--------
Emigrant Hill-Union County Line	--------	--------	--------	4.13	--------	--------	1.25	5.45
Athena-Milton	--------	--------	--------	--------	--------	--------	--------	13.00
Lazinka Ranch-Albee	--------	11.66	--------	--------	--------	--------	--------	--------
Totals for Umatilla County	--------	11.66	--------	9.95	--------	--------	4.87	22.07
UNION COUNTY								
Kamela-Hilgard	--------	--------	--------	--------	--------	--------	13.28	13.28
Hilgard-LaGrande	--------	--------	--------	--------	--------	--------	6.41	3.00

LaGrande-Hot Lake	....	....	....	....	....	....	....	7.96
Lone Tree-Union	....	....	....	0.26	....	....	1.02	....
Imbler-Elgin	....	....	....	....	....	....	1.30	....
Totals for Union County	....	....	....	0.26	....	....	22.01	24.24
WALLOWA COUNTY								
Lostine-Enterprise	....	....	....	7.70	....	....	7.67	....
Totals for Wallowa County	....	....	....	7.70	....	....	7.67	....
WASCO COUNTY								
The Dalles-West	....	....	....	....	0.34	....	....	....
The Dalles-Deschutes River	....	....	....	5.13	....	....	....	....
Dufur-Maupin	....	....	....	3.20	....	....	2.80	....
Clackamas County Line-Clear Lake	....	....	....	....	....	2.56	....	....
Wapinitia-Maupin Junction	....	....	7.40	....	....	....	....	....
Totals for Wasco County	....	....	7.40	8.33	0.34	2.56	2.80	....
WASHINGTON COUNTY								
Multnomah County Line-Beaverton	3.90	....	....	....	....	0.50	....	....
Aloha Section	....	....	....	....	....	....	....	0.40
Hillsboro-Yamhill County Line	....	....	....	....	11.60	....	....	....
Multnomah County Line-Rex	....	....	....	....	10.30	....	0.76	9.30
Totals for Washington County	3.90	....	....	....	21.90	0.50	0.76	9.70
WHEELER COUNTY								
Mitchell-Keyes Creek Summit	....	7.00	0.48	....	....	....	....	....
Keyes Creek Summit-Fort Creek	....	....	8.02	....	....	....	....	....
Fort Creek-Barnhouse Ranch	....	....	6.95	....	....	....	....	....
Barnhouse Ranch-Grant County Line	....	....	8.40	....	....	....	....	....
Gilliam County Line-Fossil	....	....	....	....	....	6.25	....	....
Totals for Wheeler County	....	7.00	23.85	....	....	6.25	....	....
YAMHILL COUNTY								
Washington County Line-Newberg	....	....	....	....	2.17	....	....	....
Amity-Polk County Line	....	....	....	....	3.23	....	....	....
Bee Ranch-Foster Mill	....	....	....	0.25	....	....	....	....
Totals for Yamhill County	....	....	....	0.25	5.40	....	....	....
Totals for Entire State	*24.92	124.87	273.70	231.49	226.99	377.69	255.77	195.61

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* Includes 10.05 miles of new concrete paving, 8.30 miles of concrete repaving, and 6.5 7 miles of bituminous repaving.

TABLE No. 24

MILEAGES OF SURVEYS MADE

December 1, 1928, to September 30, 1930

This table includes only surveys made for state highways and only surveys made under the supervision of the State Highway Commission. It does not include surveys for market roads or surveys for state highways by the Bureau of Public Roads.

County and Section	Miles of Completed Surveys
BAKER COUNTY	
Pleasant Valley-Durkee, revision	12.39
Durkee-Malheur County Line, revision	14.00
Total for Baker County	26.39
CLACKAMAS COUNTY	
Mt. Hood Highway, revisions in Clackamas County	3.49
Total for Clackamas County	3.49
CLATSOP COUNTY	
Astoria-Columbia County Line, revision	2.19
Hamlet Junction-Tillamook County Line, revision	4.29
Total for Clatsop County	6.48
COLUMBIA COUNTY	
Multnomah County Line-Rainier, revision	2.13
Total for Columbia County	2.13
COOS COUNTY	
Larsen Slough and Haynes Slough, revision	0.14
North Coos Bay Ferry approach, location	0.60
Myrtle Point-Douglas County Line, revision	1.70
Total for Coos County	2.44
CROOK COUNTY	
Bear Creek-Millican, relocation	* 12.44
Prineville-Wheeler County Line, revision	0.55
Total for Crook County	12.99
CURRY COUNTY	
Denmark-Port Orford, revision	11.30
Brush Creek-Mussel Creek, revision	0.50
Rogue River Bridge approaches, location	0.61
Total for Curry County	12.41
DESCHUTES, LAKE AND HARNEY COUNTIES	
Millican-Sage Hen Hill, relocation	† 28.49
Total for this survey	28.49
DOUGLAS COUNTY	
Lane County Line-Gardiner, relocation	3.41
Comstock Overcrossing, relocation	1.81
Total for Douglas County	5.22
GRANT COUNTY	
Forest Boundary-John Day, location	2.46
Coles Bridge-Prairie City, revision	20.08
Rock Creek-Valades Ranch, revision	3.38
Total for Grant County	25.92

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* Consists of 8.53 miles in Crook County and 3.91 in Deschutes County.

† Consists of 5.84 miles in Deschutes County and 22.65 miles in Harney County.

TABLE No. 24—Continued

County and Section	Miles of Completed Surveys
JACKSON COUNTY	
Gold Hill-Medford, revision	0.69
Ashland-California State Line, revision	7.20
Pacific Highway Junction-Klamath County Line, revision	21.70
Total for Jackson County	29.59
JOSEPHINE COUNTY	
Rogue River Bridge at Grants Pass, location	0.41
Total for Josephine County	0.41
KLAMATH COUNTY	
Klamath Falls-North, revision	1.85
Merrill-California State Line, revision	12.89
Jackson County Line-Keno, revision	19.50
Total for Klamath County	34.24
LAKE COUNTY	
East Forest Boundary-Picture Rock Pass, relocation	16.23
Total for Lake County	16.23
LANE COUNTY	
Springfield-Cogswell Hill, relocation	4.40
Hendricks Bridge-Blue River, location	12.36
McKenzie Bridge Section, relocation	0.80
Lincoln County Line-China Creek, relocation	8.30
China Creek-Sutton Lake, relocation	8.84
Florence-Douglas County Line, relocation	4.59
Total for Lane County	39.29
LINCOLN COUNTY	
Newport-Waldport, relocation	4.39
Waldport-Yachats, relocation	1.91
Toledo-Eddyville, revision	16.50
Total for Lincoln County	22.80
LINN COUNTY	
Grade Crossing elimination north of Albany, location	11.48
Tangent-Shedd, widening	2.37
Cascadia Ranger Station-East, location	14.00
Total for Linn County	27.85
MALHEUR COUNTY	
Snake River Slides-Ontario, revision	21.70
Brogan-Vale, revision	7.25
Juntura-Tunnel, location	23.30
Total for Malheur County	52.25
POLK COUNTY	
Yamhill County Line-Willamina, revision	1.01
Total for Polk County	1.01
SHERMAN COUNTY	
Biggs-Blalock, revision	20.00
Kent-Wasco County Line, revision	1.98
Total for Sherman County	21.98

TABLE No. 24—Continued

County and Section	Miles of Completed Surveys
TILLAMOOK COUNTY	
Wilson River-Tillamook, revision	3.63
Moore Cut-off, revision	4.45
Hebo-Dolph, revision	2.42
Total for Tillamook County	10.50
UMATILLA COUNTY	
Umatilla-Hermiston, revision	10.00
Umatilla-Washington State Line, location	19.70
McKay Creek-Pendleton, revision	3.70
Total for Umatilla County	33.40
UNION COUNTY	
La Grande-Hot Lake, revision	7.96
Total for Union County	7.96
WASCO COUNTY	
Sherman Highway Junction-Cow Canyon, revision	2.88
Sherman County Line to The Dalles-California Highway Junction, revision	19.82
The Dalles-Biggs, revision	‡14.59
Wapinitia-Maupin Junction, location	7.40
Total for Wasco County	44.69
WASHINGTON COUNTY	
Multnomah County Line-Middleton, revision	8.29
Hillsboro-Beaverton, revision	0.80
Totals for Washington County	9.09
YAMHILL COUNTY	
Dolph-Butler's Store, revision	0.97
Total for Yamhill County	0.97
Total for entire state	478.22

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‡ Consists of 9.76 miles in Wasco County and 4.83 miles in Sherman County.

TABLE No. 25

SCHEDULE OF BRIDGES AND BUILDINGS CONSTRUCTED, UNDER CONSTRUCTION OR DESIGNED

December 1, 1928, to September 30, 1930

All bridges listed in this table are located on state highways, or are designed for location on state highways. The status of each structure or design as of September 30, 1930, is indicated by means of the symbols which appear in the third column, the key to which is given at the bottom of the table.

For structure designs for counties, see Table No. 26.

Job No.	Location and Type of Structure	Status	Estimated Cost
	BAKER COUNTY		
661	1-54′ pony truss on concrete columns over North Powder River on Old Oregon Trail	a	$ 8,376.58
1409	1-44′ concrete span over Alder Creek on Old Oregon Trail	a	5,997.96
1553	28′x152′ maintenance building at Baker	d	10,400.00
	BENTON COUNTY		
1410	28′x72′maintenance building at Corvallis	a	5,266.90
	CLACKAMAS COUNTY		
580	6-30′; 1-60′ concrete spans with 2-3′-6″ walks and 27′ roadway over Parrot Creek on Pacific Highway	a	35,091.28
1472	1-100′ Howe truss over Zigzag river near Rhododendron on Mt. Hood Highway	a	6,066.60
1438	1-100′ steel deck truss, 4-30′ concrete spans over Salmon River on Mt. Hood Highway	b	24,595.38
1413	28′x60′ maintenance shed at Sandy	a	4,236.16
	CLATSOP COUNTY		
921	2-32′-6″; 2-30′ concrete spans over Gnat Creek on Columbia River Highway	a	16,785.67
1400	1-46′-5″ concrete, 1-38′ steel truss, 1-45′-4″ concrete spans over Skipanon River on Roosevelt Coast Highway	a	17,697.55
1305	4-52′-6″ concrete spans over Wahanna Creek in Seaside on Roosevelt Coast Highway	a	33,300.00
1468	1-30′ concrete span over private road on Roosevelt Coast Highway	a	3,700.00
1481	2-52′, 1-68′concrete spans over Necanicum River on Roosevelt Coast Highway	a	17,000.00
	COLUMBIA COUNTY		
1476	1-30′ concrete span over Beaver Creek on Columbia River Highway	a	4,530.87
1526	Widen existing structure over Milton Creek on Columbia River Highway to 40′ roadway with 7′ walk	a	10,000.00
	COOS COUNTY		
113	27′ creosoted wood trestle span over Haines Slough on Roosevelt Coast Highway	a	9,019.47
115	27′ creosoted wood trestle span over Larson Slough on Roosevelt Coast Highway	a	9,000.00
762	2-25′; 1-30′ concrete spans over Four Mile Creek on Roosevelt Coast Highway	a	11,216.63
1412	1-24′ concrete span over Cunningham creek on Roosevelt Coast Highway	a	10,931.80
1416	Ferry slips at North Bend and Glasgow	a	76,000.00
1510	Standard maintenance building at Coquille	a	2,705.66
1516	Purchase of ferry boat "Oregon" to supplement the Ferry Roosevelt on run between North Bend and Glasgow on Roosevelt Coast Highway	a	21,508.36

Key to Symbols in Third Column: a—construction completed; b—construction in progress; d—design completed but construction not started.

TABLE No. 25—Continued

Job No.	Location and Type of Structure	Status	Estimated Cost
	CURRY COUNTY		
1172	18-16′ concrete, 7-230′ R. C. arch spans over Rogue River at Gold Beach on Roosevelt Coast Highway	b	$653,000.00
	DESCHUTES COUNTY		
1560	28′x96′ maintenance building at Redmond	d	4,000.00
1421	2-27′ concrete spans over Central Oregon canal near Bend on Central Oregon Highway	a	5,704.46
	DOUGLAS COUNTY		
983	14-19′ pile trestles; 1-84′ I-beam lift span over Schofield River near Reedsport on Roosevelt Coast Highway	a	24,055.26
1318	4-30′ concrete, 1-632′ steel truss span over Umpqua River near Scottsburg on Umpqua Highway	a	114,936.52
1404	1-30′ concrete span over Canyon Creek near Deer Park Inn on Pacific Highway	a	2,849.58
1424	2-26′; 1-36′ concrete spans over Hardscrabble Creek near Drain on Umpqua Highway	a	7,022.80
1435	2-26′ concrete spans over Jack Creek near Drain on Umpqua Highway	a	5,688.07
1473	2-30′, 1-60′ concrete spans over Myrtle Creek on Myrtle Creek line change for Pacific Highway	a	14,000.00
1486	2-45′, 1-60′ concrete spans over Wells Creek on Umpqua Highway	a	15,360.00
	GRANT COUNTY		
1554	28′x84′ storage shed at Austin	b	4,000.00
	HARNEY COUNTY		
1464	28′x84′ storage shed at Burns	a	4,306.16
	JOSEPHINE COUNTY		
1418	3-150′ R. C. arch, 2-50′ concrete spans over Rogue River at Grants Pass on Pacific Highway	b	136,000.00
	KLAMATH COUNTY		
1419	2-26′, 1-38′ concrete spans over Altamont Canal on The Dalles-California Highway	a	12,091.43
986	3-100′ R. C. arch, 2-30′ concrete spans over Klamath River at Keno on Green Springs Highway	b	57,000.00
1187	48′ addition to present maintenance building at Klamath Falls	a	3,260.96
	LAKE COUNTY		
1431	28′x48′ maintenance shed at Paisley	a	2,831.13
	LANE COUNTY		
1223	6-50′ concrete, 1-550′ through steel truss spans over Willamette River at Springfield on McKenzie Highway	a	133,079.00
1223	3-50′ concrete spans additional to Springfield Bridge at Springfield	a	14,838.93
1323	3-60′, 2-20′ concrete spans over Blue River on McKenzie Highway	a	23,444.91
1369	3-60′ concrete spans over Leaburg power plant spillway at Leaburg on McKenzie Highway	a	20,570.00
1324	3-40′, 1-60′ concrete spans over Gate Creek near Vida on McKenzie Highway	a	18,885.91
1399	2-50′ concrete spans, 1-100′ steel span encased in concrete and gunite, over McKenzie River on McKenzie Highway	a	44,325.65
1403	2-45′, 1-70′ concrete spans over Indian Creek on Siuslaw Highway	a	12,955.59
1459	Ferry slips at Glenada and Florence	a	7,960.88
982	2-52′; 1-68′ concrete spans over Siltcoos River near Florence on Roosevelt Coast Highway	b	28,000.00

Key to Symbols in Third Column: a—construction completed; b—construction in progress; d—design completed but construction not started.

TABLE No. 25—Continued

Job No.	Location and Type of Structure	Status	Estimated Cost
	LANE COUNTY—Continued		
1471	2-37′, 1-46′ concrete spans over Camas Swale near Creswell on Pacific Highway	a	$ 13,000.00
1494	2-34′, 1-42′ concrete spans over Sutton Creek, near Florence on Roosevelt Coast Highway	b	14,000.00
1516	2-40′, 1-58′ concrete spans over Walterville Canal at Walterville on McKenzie Highway	a	15,000.00
1331	2-100′ steel pony truss spans over Deadwood Creek near Swisshome on Siuslaw Highway	a	33,073.20
	LINCOLN COUNTY		
1050	Reconstruction of Monterey undercrossing on Roosevelt Coast Highway	a	2,854.03
1430	2-35′, 1-50′ concrete spans over Big Creek on Roosevelt Coast Highway	a	13,734.00
1374	Ferry slip at Yaquina Bay on Roosevelt Coast Highway	a	6,800.00
1423	Ferry slips at Waldport on Roosevelt Coast Highway	a	10,000.00
1089	8-20′ concrete, 1-160′ R. C. arch spans over Rocky Creek on Roosevelt Coast Highway	a	59,336.89
	LINN COUNTY		
1512	2-30′, 1-40′ concrete spans over Dobbin Creek on Santiam Highway	b	8,000.00
1513	2-20′, 1-40′ concrete spans over Wolf Creek on Santiam Highway	b	5,500.00
1514	1-50′, 1-70′, 1-40′ concrete spans over Canyon Creek on Santiam Highway	b	11,500.00
	MALHEUR COUNTY		
1407	2-25′ concrete, 2-101′ Howe truss spans over Malheur River near Burrelle Ranch on Central Oregon Highway	a	30,317.12
1429	28′x72′ maintenance building at Ontario	a	4,724.83
1463	Reconstruct timber portion of bridge over Snake River at Nyssa	a	15,855.21
	MARION COUNTY		
1462	48′x264′ standard shed building at Salem	a	5,029.22
1511	Storage building and loading dock at Salem	a	5,109.24
1535	80′x192′ shop building at Salem	b	17,930.00
1555	Remodeling basement of Printers building for testing laboratory	a	3,000.00
	MULTNOMAH COUNTY		
1377	Safety traffic gates and warning signals on Interstate Bridge on the Pacific Highway between Portland, Oregon, and Vancouver, Washington	d	11,500.00
	POLK COUNTY		
615	5-40′ concrete, 1-100′ steel pony truss spans over Luckiamute River on West Side Pacific Highway	a	38,497.01
	TILLAMOOK COUNTY		
1216	1-120′ steel truss, 285′ timber piling approach over Trask River on Roosevelt Coast Highway near Tillamook	a	25,164.13
505	180′ R. C. viaduct over S. P. tracks near Tillamook on Roosevelt Coast Highway	b	21,000.00
1485	4′x5′ concrete culvert over Rockaway Creek in Rockaway on Roosevelt Coast Highway	a	2,229.90
1498	2-37′, 1-46′ concrete spans over Wilson River Slough near Tillamook on Roosevelt Coast Highway	b	12,240.00
1499	2-40′ concrete, 1-120′ tied arch spans over Wilson River near Tillamook on the Roosevelt Coast Highway	b	38,760.00
1500	2-34′, 1-42′-6″ concrete spans over Hoquarton Slough near Tillamook on the Roosevelt Coast Highway	b	15,300.00
1527	2-40′ concrete spans over Hall Slough near Tillamook on Roosevelt Coast Highway	b	9,900.00
1528	2-40′, 1-50′ concrete spans over Dougherty Slough near Tillamook on Roosevelt Coast Highway	b	19,800.00
1561	28′x96′ storage building at Hebo	b	3,200.00

Key to Symbols in Third Column: a—construction completed; b—construction in progress; d—design completed but construction not started.

TABLE No. 25—Continued

Job No.	Location and Type of Structure	Status	Estimated Cost
	UMATILLA COUNTY		
1461	28'x160' maintenance building at Pendleton	a	$ 8,283.69
1497	Comfort station at Emigrant Springs Park	b	2,997.68
	UNION COUNTY		
1414	48'x144' storage building at La Grande	a	11,167.40
1248	6-50' concrete spans over Grande Ronde River near Hilgard on Old Oregon Trail	a	31,000.00
	WASCO COUNTY		
966	1-200' steel truss, 625' R. C. viaduct approach over Deschutes River at Maupin on The Dalles-California Highway	a	103,930.17
	WASHINGTON COUNTY		
1417	1-150' steel deck truss, 360' R. C. viaduct approach over Tualatin River near Tigard on West Side Pacific Highway	a	74,578.48
	WHEELER COUNTY		
1425	1-36', 2-26' concrete spans over Bridge Creek near Mitchell on Ochoco Highway	a	9,608.05
1469	1-60', 2-45' concrete spans over Rock Creek on Ochoco Highway	b	17,000.00
	YAMHILL COUNTY		
1396	2-18', 1-45' concrete spans over Agency Creek near Grande Ronde on McMinnville-Tillamook Highway	a	8,494.88
612	100' R. C. viaduct near New Grande Ronde on McMinnville-Tillamook Highway	a	12,732.31

Key to Symbols in Third Column: a—construction completed; b—construction in progress; d—design completed but construction not started.

TABLE No. 26

BRIDGE DESIGNS PREPARED FOR COUNTIES

December 1, 1928, to September 30, 1930

Designs for the following bridges, constructed or to be constructed on county roads, have been prepared by the State Highway Department, at the request of county road officials. In most cases the State Highway Department has also supervised and engineered the construction work.

For the status of each structure as of September 30, 1930, refer to the third column and to the key to symbols given at the bottom of the page.

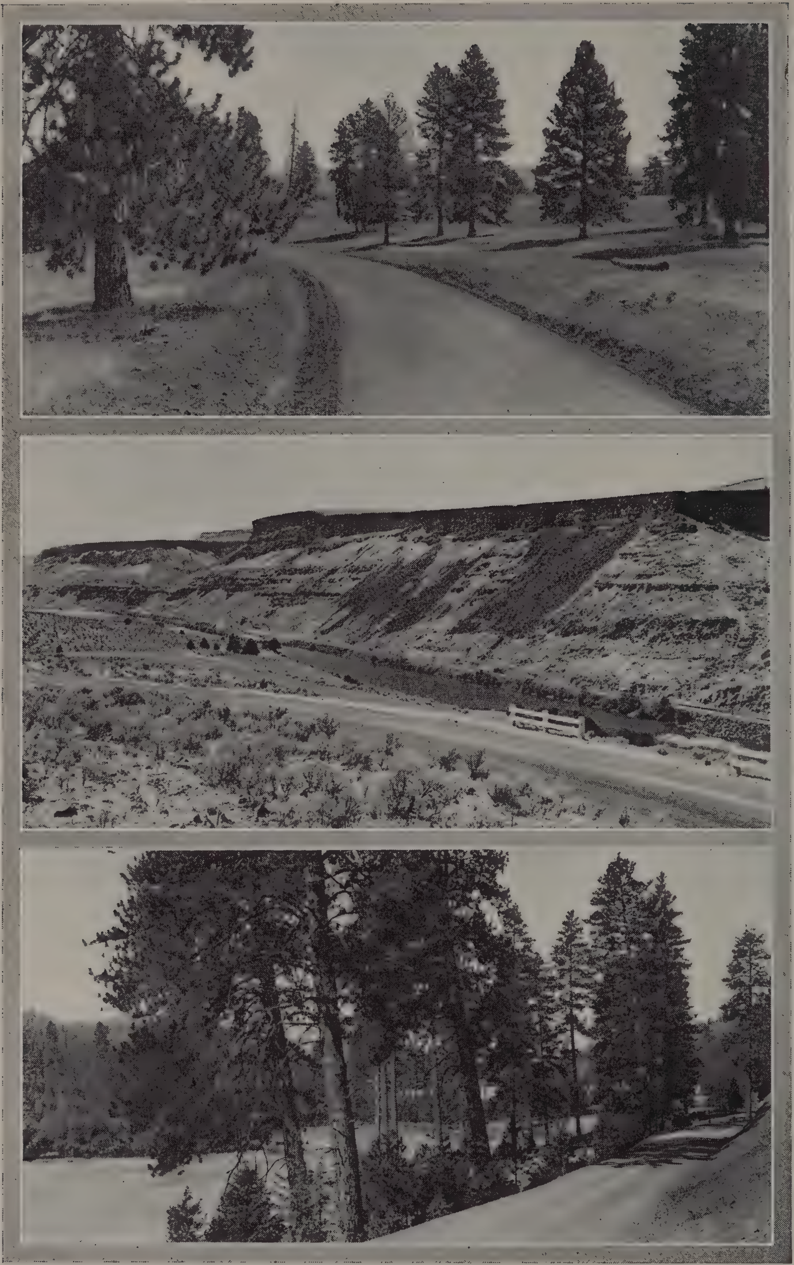
Bridge No.	Location and Type of Structure	Status Sept. 30, 1930
	BENTON COUNTY	
1422	50′ "I" beam span over Rice Creek on Kings Valley Market Road No. 6	a
1441	1-75′ Howe truss, 4-15′ frame trestle spans over Marys River on Market Road No. 2	a
	CLACKAMAS COUNTY	
1446	1-180′ steel truss, 14-19′ pile trestle over Clackamas River	b
1515	2-90′ steel trusses, 9-19′ pile trestle spans over Molalla River near Canby	b
	COLUMBIA COUNTY	
1415	1-30′, 1-50′, 1-40′ concrete spans over east fork Nehalem River on Market Road No. 4	a
1508	2-42′-6″; 1-55′ concrete spans over Rock Creek in Vernonia on Market Road No. 4	a
1520	53′ concrete span over Milton Creek on Old Portland Road	a
	COOS COUNTY	
1132	110′ Bascule with 1400 lin. ft. concrete approach over ast Side Slough at Marshfield	d
1492	12-19′, 1-105′ Howe truss spans over Millacoma River on Alleghaney Market Road No. 3	a
	HARNEY COUNTY	
1408	4-17′ pile trestle, 1-56′ wood truss spans over Malheur River on Burns-Drewsey Market Road No. 4	a
	JACKSON COUNTY	
1436	8-21′pile trestle, 1-90′ steel pony truss spans over Bear Creek on Market Road No. 3	a
	LAKE COUNTY	
1384	2-23′ frame trestle, 1-45′ "A" frame spans over Deep Creek on Adel-South Market Road No. 4	d
	LANE COUNTY	
1393	Revamp old Springfield Bridge and move to new location on Creswell Market Road No. 25	a
1336	2-170′steel trusses,11-19′ pile trestle spans over McKenzie River on Coburg Market Road No. 41	a
1483	10-19′ pile trestle, 1-60′ Howe truss spans near Portage on Market Road No. 56	d
1493	1-15′, 1-19′ pile trestle spans, 1-45′ Howe truss span over Condon Creek on Market Road No. 47	d
	LINCOLN COUNTY	
1401	2-19′ pile trestle, 1-50′ steel pony truss spans over Yaquina River on Yaquina Market Road No. 3	a
1402	5-15′ pile trestle, 1-70′ steel pony truss spans over Yaquina River on Yaquina River Market Road No. 3	a
1490	2-19′, 1-30′ log trestle spans over Bear Creek on Siletz Market Road No. 2	d
1941	2-19′, 1-30′ log trestle spans over Skunk Creek on Siletz Market Road No. 3	d

Key to Symbols in Third Column: a—construction completed; b—construction in progress; d—design completed but construction not started.

TABLE No. 26—Continued

Bridge No.	Location and Type of Structure	Status Sept. 30, 1930
	LINN COUNTY	
1428	3-19′ pile trestle, 1-105′ Howe truss spans over Calapooia River at Crawfordsville on Market Road No. 3	a
1509	77′ frame trestle, 1-153′-9″ Howe truss spans over South Fork Santiam River 10 miles S. E. from Lebanon	a
	MALHEUR COUNTY	
1443	Move and re-erect 150′ steel truss from Vale to site over Donner Creek on Jordan Valley Road	a
1444	6-19′ pile trestle, 1-130′ steel truss spans over Malheur River on Little Valley Market Road No. 9	a
	MARION COUNTY	
1426	3-17′ concrete pile and slab spans over Penitentiary ditch on Market Road No. 27	a
1427	2-32′, 1-40′ concrete spans over Mill Creek near Salem on Market Road No. 27	a
1437	4-21′ pile trestle, 1-120′ steel truss spans over Pudding River on Market Road No. 57	a
1484	2-30′, 1-40′ concrete spans over Little Pudding River on Market Road No. 52	a
1501	2-37′-6″ concrete spans over Mill Creek on Market Road No. 28 near Turner	a
1502	2-45′ concrete spans over Mill Creek on Market Road No. 3	a
1503	2-30′ concrete spans over Mill Creek on Market Road No. 28	a
1504	2-30′ concrete spans over Mill Creek on Market Road No. 28	a
1505	2-30′ concrete spans over Mill Creek on Market Road No. 28	a
1506	2-30′ concrete spans over Mill Creek on Market Road No. 28	a
1507	Triple 4′x6′ concrete culverts over Mill Creek on Market Road No. 28	a
1517	4′x4′ concrete culverts on Market Road No. 28 near Salem	a
1522	6′x6′ concrete culverts over Pudding River on Market Road No. 42	a
1523	6′x8′ concrete culverts over Pudding River on Market Road No. 42	a
1524	Triple 4′x6′ concrete culverts on Market Road No. 31 near Stayton	a
1525	6′x10′ concrete culverts on Market Road No. 43 near Silver City	a
1531	Triple 4′x6′ concrete culverts on Market Road No. 40 near Aumsville	a
1534	2-26′, 1-36′ concrete spans over Drift Creek near Silverton on Market Road No. 34	a
	MORROW COUNTY	
1458	2-19′ frame trestle, 1-40′ "A" frame and spans over Rhea Creek on Market Road No. 14	d
	POLK COUNTY	
1420	8-19′ pile trestle spans over Spring Valley Creek on Wallace Market Road No. 5	a
	TILLAMOOK COUNTY	
1345	1-160′ steel swing span with 380′ pile trestle approach over Tillamook River on Tillamook-Bay Ocean Road	a
1355	1-120′ steel truss with 300′ pile trestle approach over Trask River near Tillamook on Market Road No. 13	a
1372	1-120′ steel truss with 173′ pile trestle approach over Big Nestucca River near Woods	a
1362	1-220′ steel truss with 4-19′ pile trestle approach spans over South Fork Nehalem River on Market Road No. 9	a
	UNION COUNTY	
1495	1-100′ pony truss with 43′ pile trestle approach over Government Ditch near Alicel on county road	b
	WASHINGTON COUNTY	
1460	1-100′ steel truss, 380′ pile trestle approach over Tualatin River on Market Road No. 5	a
	YAMHILL COUNTY	
1470	15-19′ pile trestle spans at Snyder Bridge on Market Road No. 16	a
1496	Repairs to Island Bridge over Willamette Slough on Market Road No. 29	a

Key to Symbols in Third Column: a—construction completed; b—construction in progress; d—design completed but construction not started.



UPPER—OLD OREGON TRAIL NEAR SUMMIT OF BLUE MOUNTAINS EAST OF PENDLETON; CENTER—THE DALLES-CALIFORNIA HIGHWAY SOUTH OF MAUPIN; LOWER—OCHOCO HIGHWAY TWENTY MILES EAST OF PRINEVILLE

TABLE No. 27

APPORTIONMENT OF STATE MARKET ROAD FUNDS

1920 to 1930, Inclusive

County	1920-1926	1927	1928	1929	1930	1920-1930
Baker	$ 222,343.19	$ 32,299.09	$ 32,105.93	$ 31,620.58	$ 31,730.36	$ 350,099.15
Benton	136,347.76	22,665.49	22,812.81	22,752.47	22,612.76	227,191.29
Clackamas ..	377,605.38	70,000.00	71,162.12	71,901.93	71,194.13	661,863.56
Clatsop	291,395.87	40,199.39	37,722.55	32,000.00	33,427.03	434,744.84
Columbia	172,997.84	20,537.12	25,359.41	24,364.29	23,784.48	267,043.14
Coos	223,979.06	37,045.39	37,714.72	36,951.72	36,190.73	371,881.62
Crook	59,272.87	8,076.34	7,801.21	7,561.81	7,574.05	90,286.28
Curry	38,685.96	6,000.51	5,909.67	6,070.03	6,178.90	62,845.07
Deschutes	101,575.47	17,723.05	17,575.44	17,560.06	18,497.67	172,931.69
Douglas	270,242.98	45,166.18	44,525.49	43,352.22	43,563.24	446,850.11
Gilliam	104,474.63	13,827.49	13,223.50	13,465.06	13,612.35	158,603.03
Grant	79,011.04	10,497.10	10,161.32	10,122.96	10,237.77	120,030.19
Harney	100,597.62	12,215.47	11,827.18	11,962.34	12,095.34	148,697.95
Hood River..	99,360.35	14,302.22	14,076.02	13,778.37	13,632.65	155,149.61
Jackson	278,418.43	42,294.68	42,301.72	42,585.28	43,272.66	448,872.77
Jefferson	54,238.19	7,518.95	7,396.89	7,259.40	7,228.77	83,642.20
Josephine	77,563.94	11,216.04	11,087.50	10,687.24	10,800.20	121,354.92
Klamath	183,660.29	37,104.53	42,069.79	46,000.00	49,182.85	358,017.46
Lake	102,434.72	14,219.17	14,014.91	14,397.22	14,432.56	159,498.58
Lane	403,144.72	68,756.00	73,000.35	73,395.28	74,206.24	692,502.59
Lincoln	78,669.74	12,437.23	12,134.34	11,920.26	11,970.36	127,131.93
Linn	314,478.35	46,474.36	46,344.94	46,058.33	45,922.32	499,278.30
Malheur	152,816.78	18,610.27	17,420.29	16,934.98	16,930.67	222,712.99
Marion	432,672.34	68,224.95	68,999.46	69,610.48	72,365.86	711,873.09
Morrow	108,806.35	15,393.87	15,252.95	15,240.54	15,115.27	169,808.98
Multnomah ..	721,554.52	110,181.75	112,441.65	112,000.00	112,498.87	1,168,676.79
Polk	181,036.63	27,119.77	26,494.01	25,852.96	25,340.55	285,843.92
Sherman	111,178.60	14,233.44	13,768.86	13,726.94	13,702.96	166,610.80
Tillamook	187,740.31	29,500.00	30,990.12	30,164.64	29,886.85	308,281.92
Umatilla	456,131.01	65,699.57	65,149.01	64,605.12	64,807.43	716,392.14
Union	200,232.60	27,541.02	27,858.99	27,522.45	28,387.03	311,542.09
Wallowa	122,184.16	16,276.42	15,404.95	14,372.28	13,493.61	181,731.42
Wasco	172,847.83	25,046.45	26,616.25	25,185.78	25,093.70	274,790.01
Washington ..	308,416.41	49,911.71	49,925.84	49,186.87	48,596.97	506,037.80
Wheeler	47,201.44	6,442.49	6,335.94	6,490.91	6,811.64	73,282.42
Yamhill	217,581.44	29,980.41	32,958.45	32,370.37	32,111.57	345,002.24
Totals	$7,190,898.82	$1,094,737.92	$1,109,944.58	$1,099,031.17	$1,106,490.40	$11,601,102.89

TABLE No. 28

APPORTIONMENT OF STATE MARKET ROAD FUNDS—1929

County	Amount Paid Into State Market Road Fund by County	County's Pro Rata Share of Surplus Funds	County's Pro Rata Share of All Funds	County Market Road Levy for 1929	Final Apportionment of State Funds		
					Total	Paid to County in Cash	Paid to County in Services and Supplies
Baker	$ 22,766.51	$ 8,854.07	$ 31,620.58	$ 32,001.76	$ 31,620.58	$ 31,620.58	$
Benton	16,381.56	6,370.91	22,752.47	25,000.00	22,752.47	22,752.47	
Clackamas	51,768.69	20,133.24	71,901.93	75,000.02	71,901.93	71,901.93	
Clatsop	25,437.66	9,892.90	35,330.56	32,000.00	32,000.00	32,000.00	
Columbia	17,542.05	6,822.24	24,364.29	25,141.97	24,364.29	24,362.89	1.40
Coos	26,604.88	10,346.84	36,951.72	51,011.83	36,951.72	36,951.72	
Crook	5,444.43	2,117.38	7,561.81	10,000.00	7,561.81	7,561.81	
Curry	4,370.36	1,699.67	6,070.03	6,600.00	6,070.03	6,070.03	
Deschutes	12,643.07	4,916.99	17,560.06	18,000.00	17,560.06	16,754.91	805.15
Douglas	31,213.18	12,139.04	43,352.22	50,998.67	43,352.22	42,783.13	569.09
Gilliam	9,694.71	3,770.35	13,465.06	14,288.31	13,465.06	13,465.06	
Grant	7,288.43	2,834.53	10,122.96	13,500.00	10,122.96	10,122.96	
Harney	8,612.77	3,349.57	11,962.34	14,000.00	11,962.34	8,906.20	3,056.14
Hood River	9,920.29	3,858.08	13,778.37	16,009.63	13,778.37	13,778.37	
Jackson	30,660.99	11,924.29	42,585.28	51,677.56	42,585.28	42,585.28	
Jefferson	5,226.70	2,032.70	7,259.40	8,000.00	7,259.40	7,259.40	
Josephine	7,694.71	2,992.53	10,687.24	13,500.00	10,687.24	10,687.24	
Klamath	33,568.96	13,055.23	46,624.19	46,000.00	46,000.00	46,000.00	
Lake	10,365.86	4,031.35	14,397.22	21,165.41	14,397.22	14,107.38	289.84
Lane	52,843.89	20,551.39	73,395.28	77,389.37	73,395.28	73,395.28	
Lincoln	8,582.47	3,337.79	11,920.26	12,223.45	11,920.26	11,920.26	
Linn	33,161.55	12,896.78	46,058.33	48,346.22	46,058.33	46,058.33	
Malheur	12,193.02	4,741.96	16,934.98	17,759.86	16,934.98	16,934.98	
Marion	50,118.87	19,491.61	69,610.48	75,000.00	69,610.48	69,610.48	
Morrow	10,973.04	4,267.50	15,240.54	15,378.00	15,240.54	15,240.54	
Multnomah	408,831.95		112,233.22	112,000.00	112,000.00	112,000.00	
Polk	18,613.88	7,239.08	25,852.96	27,002.05	25,852.96	25,852.96	
Sherman	9,883.26	3,843.69	13,726.94	29,771.00	13,726.94	13,726.94	
Tillamook	21,718.25	8,446.39	30,164.64	35,001.85	30,164.64	30,164.64	
Umatilla	46,515.06	18,090.06	64,605.12	66,000.00	64,605.12	64,592.20	12.92
Union	19,815.90	7,706.55	27,522.45	54,000.00	27,522.45	27,522.45	
Wallowa	10,347.90	4,024.38	14,372.28	20,504.85	14,372.28	14,372.28	
Wasco	18,133.52	7,052.26	25,185.78	30,749.75	25,185.78	25,185.78	
Washington	35,414.07	13,772.80	49,186.87	53,932.24	49,186.87	49,047.53	139.34
Wheeler	4,673.39	1,817.52	6,490.91	10,000.23	6,490.91	6,408.73	82.18
Yamhill	23,306.35	9,064.02	32,370.37	32,479.15	32,370.37	32,370.37	
Totals	$1,122,332.18	$ 277,485.69	$1,103,219.14	$1,241,433.18	$1,099,031.17	$1,094,075.11	$ 4,956.06

TABLE No. 29
APPORTIONMENT OF STATE MARKET ROAD FUNDS—1930

County	Amount Paid Into State Market Road Fund by County	County's Pro Rata Share of Surplus Funds	County's Pro Rata Share of All Funds	County Market Road Levy for 1930	Final Apportionment of State Funds		
					Total	Paid to County in Cash	Paid to County in Services and Supplies
Baker	$ 22,848.52	$ 8,881.84	$ 31,730.36	$ 35,000.00	$ 31,730.36	$ 31,730.36	$ ....
Benton	16,283.08	6,329.68	22,612.76	25,000.00	22,612.76	22,612.76	....
Clackamas	51,265.74	19,928.39	71,194.13	75,000.00	71,194.13	71,194.13	....
Clatsop	24,070.26	9,356.77	33,427.03	32,000.00	33,427.03	33,427.03	....
Columbia	17,126.82	6,657.66	23,784.48	18,264.56	23,784.48	23,784.48	....
Coos	26,060.36	10,130.37	36,190.73	40,000.00	36,190.73	36,190.73	....
Crook	5,453.95	2,120.10	7,574.05	10,000.00	7,574.05	7,533.67	40.38
Curry	4,449.33	1,729.57	6,178.90	6,600.00	6,178.90	6,117.11	61.79
Deschutes	13,319.87	5,177.80	18,497.67	* 1,500.00	18,497.67	18,497.67	....
Douglas	31,369.18	12,194.06	43,563.24	50,181.13	43,563.24	43,563.24	....
Gilliam	9,802.03	3,810.32	13,612.35	13,765.12	13,612.35	13,612.35	....
Grant	7,372.05	2,865.72	10,237.77	13,699.22	10,237.77	10,237.77	....
Harney	8,709.66	3,385.68	12,095.34	11,000.00	12,095.34	11,066.29	1,029.05
Hood River	9,816.65	3,816.00	13,632.65	14,000.00	13,632.65	13,632.65	....
Jackson	31,159.94	12,112.72	43,272.66	52,000.00	43,272.66	43,272.66	....
Jefferson	5,205.32	2,023.45	7,228.77	8,000.00	7,228.77	7,228.77	....
Josephine	7,777.05	3,023.15	10,800.20	13,500.00	10,800.20	10,800.20	....
Klamath	35,415.77	13,767.08	49,182.85	46,000.00	49,182.85	49,182.85	....
Lake	10,392.65	4,039.91	14,432.56	18,200.00	14,432.56	14,432.56	....
Lane	53,434.71	20,771.53	74,206.24	81,000.00	74,206.24	74,206.24	....
Lincoln	8,619.66	3,350.70	11,970.36	12,225.00	11,970.36	11,940.26	30.10
Linn	33,067.92	12,854.40	45,922.32	46,250.00	45,922.32	45,922.32	....
Malheur	12,191.50	4,739.17	16,930.67	17,500.00	16,930.67	16,930.67	....
Marion	52,109.48	20,256.38	72,365.86	75,000.00	72,365.86	72,365.86	....
Morrow	10,884.26	4,231.01	15,115.27	15,380.00	15,115.27	15,115.27	....
Multnomah	409,231.51	....	112,498.87	113,858.07	112,498.87	112,498.87	....
Polk	18,247.32	7,093.23	25,340.55	27,000.00	25,340.55	25,340.55	....
Sherman	9,867.28	3,835.68	13,702.96	25,771.00	13,702.96	13,702.96	....
Tillamook	21,521.04	8,365.81	29,886.85	36,000.00	29,886.85	29,886.85	....
Umatilla	46,666.78	18,140.65	64,807.43	66,000.00	64,807.43	64,807.43	....
Union	20,441.04	7,945.99	28,387.03	74,095.04	28,387.03	28,387.03	....
Wallowa	9,716.53	3,777.08	13,493.61	17,500.00	13,493.61	13,493.61	....
Wasco	18,069.57	7,024.13	25,093.70	30,022.69	25,093.70	25,093.70	....
Washington	34,993.89	13,603.08	48,596.97	54,038.09	48,596.97	48,596.97	....
Wheeler	4,904.95	1,906.69	6,811.64	10,038.85	6,811.64	6,811.64	....
Yamhill	23,123.02	8,988.55	32,111.57	30,017.65	32,111.57	32,111.57	....
Totals	$1,124,988.69	$ 278,234.35	$1,106,490.40	$1,215,406.42	$1,106,490.40	$1,105,329.08	$ 1,161.32

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* In 1926, Deschutes county voted a bond issue based on Market Road Income. Above levy was made for maintenance only, and a separate levy is being made to pay interest and retire bonds.

TABLE No. 30

SUMMARY OF RECEIPTS AND EXPENDITURES BY COUNTIES IN CONNECTION WITH MARKET ROAD WORK—YEAR 1929

With the exception of amounts pertaining to state apportionments and state payments, the information given in this table is based upon information furnished by the officials of the respective counties.

County	County Market Road Tax Collected	State Market Road Funds Paid to County in Cash	Funds from Other Sources Expended on Market Roads	County's Income for Year for Market Roads	Balance Carried Forward from Previous Years	Total Cash Available	Balance on Hand at End of Year	Total Cash Expended by County	State Market Road Funds Paid County in Form of Services and Supplies	Total Expended on Market Roads
Baker	$ 33,297.48	$ 31,620.58	$ 1,395.83	$ 66,313.89	$ 9,660.06	$ 75,973.95	$ 10,883.77	$ 65,090.18	$	$ 65,090.18
Benton	24,179.44	22,752.47		46,931.91	8,163.95	55,095.86	8,019.20	47,076.66		47,076.66
Clackamas	75,000.02	71,901.93	116,609.87	263,511.82		263,511.82	2,511.51	261,000.31		261,000.31
Clatsop	29,831.13	32,000.00	101,181.01	163,012.14	14,579.58	177,591.72	17,388.68	160,203.04		160,203.04
Columbia	23,881.49	24,362.89	29,715.77	77,960.15	5,345.07	83,305.22	10,314.18	72,991.04	1.40	72,992.44
Coos	36,604.33	36,951.72	15,449.22	89,005.27	—83,567.72	5,437.55	—75,092.80	80,530.35		80,530.35
Crook	9,823.97	7,561.81	30.00	17,415.78	—3,403.07	14,012.71	1,147.26	12,865.45		12,865.45
Curry	10,838.65	6,070.03	2,089.19	18,997.87	—8,368.52	10,629.35	472.45	10,156.90		10,156.90
Deschutes	11,698.47	16,754.91		28,453.38	29,227.35	57,680.73	41,363.30	16,317.43	805.15	17,122.58
Douglas	48,207.74	42,783.13	81,924.42	172,915.29	—14,634.58	158,280.71	27,603.91	130,676.80	569.09	131,245.89
Gilliam	13,051.42	13,465.06	49,673.74	76,190.22	7,831.13	84,021.35	8,470.17	75,551.18		75,551.18
Grant	13,834.49	10,122.96	5,452.49	29,409.94	2,253.36	31,663.30	4,677.39	26,985.91		26,985.91
Harney	14,373.85	8,906.20	1,854.16	25,134.21	26,358.16	51,492.37	17,295.17	34,197.20	3,056.14	37,253.34
Hood River	14,000.00	13,778.37	25.00	27,803.37	—5,980.88	21,822.49	—6,575.92	28,398.41		28,398.41
Jackson	50,181.14	42,585.28	29,575.23	122,341.65	53,916.19	176,257.84	30,302.00	145,955.84		145,955.84
Jefferson	7,859.97	7,259.40	2,535.31	17,654.68	2,122.16	19,776.84	818.60	18,958.24		18,958.24
Josephine	13,500.00	10,687.24	9,406.61	33,593.85		33,593.85		33,593.85		33,593.85
Klamath	45,287.42	46,000.00	455.16	91,742.58	29,527.40	121,269.98	44,390.91	76,879.07		76,879.07
Lake	20,328.55	14,107.38	88.87	34,524.80	8,379.69	42,904.49	14,557.05	28,347.44	289.84	28,637.28
Lane	76,847.39	73,395.28	42,580.21	192,822.88	—37,508.88	155,314.00	591.75	154,722.25		154,722.25
Lincoln	17,987.43	11,920.26	10,021.85	39,929.54	3,328.20	43,257.74	1,331.55	41,926.19		41,926.19
Linn	48,346.22	46,058.33	18,807.10	113,211.65	—6,989.57	106,222.08	124,21	106,097.87		106,097.87
Malheur	17,980.64	16,934.98	1,077.50	35,993.12	31,049.50	67,042.62	25,542.82	41,499.80		41,499.80
Marion	75,000.00	69,610.48	167,195.82	311,806.30		311,806.30		311,806.30		311,806.30
Morrow	14,668.90	15,240.54	46,033.22	75,942.66	11,673.87	87,616.53	6,395.58	81,220.95		81,220.95
Multnomah	112,233.22	112,000.00		224,233.22		224,233.22		224,233.22		224,233.22
Polk	28,455.56	25,852.96		54,308.52	—9,617.51	44,691.01	—910.74	45,601.75		45,601.75
Sherman	25,771.00	13,726.94		39,497.94	—17,887.18	21,610.76	—22,666.57	44,277.33		44,277.33
Tillamook	34,695.32	30,164.64	23,129.17	87,989.13	1,189.59	89,178.72	—11,672.73	100,851.45		100,851.45
Umatilla	64,323.73	64,592.20	26,107.51	155,023.44	—37,684.59	117,338.85	581.47	116,757.38	12.92	116,770.30
Union	51,642.01	27,522.45	98.81	79,263.27	27,030.38	106,293.65	36,978.48	69,315.17		69,315.17
Wallowa	22,802.06	14,372.28	20,894.40	58,068.74	17,563.13	75,631.87	9,089.23	66,542.64		66,542.64
Wasco	30,653.22	25,185.78	2,013.99	57,852.99	—10,102.56	47,750.43	1,479.65	46,270.78		46,270.78
Washington	53,892.87	49,047.53	65,791.55	168,731.95	—44,747.61	123,984.34	—40,840.11	164,824.45	139.34	164,963.79
Wheeler	3,094.45	6,408.73		9,503.18	6,889.48	16,392.66	5,715.78	10,676.88	82.18	10,759.06
Yamhill	31,173.05	32,370.37	5.44	63,548.86	13,406.02	76,954.88	16,516.00	60,438.88		60,438.88
Totals	$1,205,346.63	$1,094,075.11	$ 871,218.45	$3,170,640.19	$ 29,001.60	$3,199,641.79	$ 186,803.20	$3,012,838.59	$ 4,956.06	$3,017,794.65

TABLE No. 31

SUMMARY OF RECEIPTS AND EXPENDITURES BY COUNTIES IN CONNECTION WITH MARKET ROAD WORK—YEAR 1930

With the exception of amounts pertaining to state apportionments and state payments, the information given in this table is based upon information furnished by the officials of the respective counties and is not for the full year. The expenditures are to October 1, 1930.

County	County Market Road Tax Collected	State Market Road Funds Paid to County in Cash	Funds from Other Sources Expended on Market Roads	County's Income for Year for Market Roads	Balance Carried Forward from Previous Years	Total Cash Available	Balance on Hand at End of Year	Total Cash Expended by County	State Market Road Funds Paid in Form of Services and Supplies	Total Expended on Market Roads
Baker	$ 20,498.63	$ 31,730.36	$	$ 52,228.99	$ 10,883.77	$ 63,112.76	$ 9,432.52	$ 53,680.24	$	$ 53,680.24
Benton	13,937.38	22,612.76	10,109.62	46,659.76	8,019.20	54,678.96	19,270.91	35,408.05		35,408.05
Clackamas	75,000.00	71,194.13	14,645.75	160,839.88	2,511.51	163,351.39	—9,356.66	172,708.05		172,708.05
Clatsop	14,536.38	33,427.03	65,272.35	113,235.76	17,388.68	130,624.44	23,524.94	107,099.50		107,099.50
Columbia	10,285.90	23,784.48	18,031.71	52,102.09	10,314.18	62,416.27	31,957.93	30,458.34		30,458.34
Coos	40,000.00	36,190.73	20,261.54	96,452.27	—75,092.80	21,359.47	—102,547.04	123,906.51		123,906.51
Crook	5,180.62	7,533.67	800.00	13,514.29	1,147.26	14,661.55	3,748.71	10,912.84	40.38	10,953.22
Curry	4,508.51	6,117.11	86.63	10,712.25	472.45	11,184.70	1,084.24	10,100.46	61.79	10,162.25
Deschutes	3,277.31	18,497.67	68.91	21,843.89	12,838.30	34,682.19	25,539.11	9,143.08		9,143.08
Douglas	24,181.71	43,563.24	20,701.78	88,446.73	27,603.91	116,050.64	6,299.36	109,751.28		109,751.28
Gilliam	6,974.64	13,612.35		20,586.99	8,470.17	29,057.16	22,836.43	6,220.73		6,220.73
Grant	6,619.22	10,237.77	20,641.67	37,498.66	4,677.39	42,176.05	6,630.61	35,545.44		35,545.44
Harney	9,348.08	11,066.29	6,094.00	26,508.37	17,295.17	43,803.54	5,543.28	38,260.26	1,029.05	39,289.31
Hood River	10,000.00	13,632.65		23,632.65	—6,575.92	17,056.73	—15,929.55	32,986.28		32,986.28
Jackson	22,720.95	43,272.66	275.43	66,269.04	30,302.00	96,571.04	21,909.64	74,661.40		74,661.40
Jefferson	7,775.24	7,228.77		15,004.01	818.60	15,822.61	7,209.89	8,612.72		8,612.72
Joseph'ne	13,500.00	10,800.20		24,300.20		24,300.20	9,378.29	14,921.91		14,921.91
Klamath	24,169.44	49,182.85		73,352.29	44,390.91	117,743.20	—668.71	118,411.91		118,411.91
Lake	10,147.57	14,432.56		24,580.13	14,557.05	39,137.18	24,121.89	15,015.29		15,015.29
Lane	44,106.17	74,206.24	74,492.10	192,804.51	591.75	193,396.26	—9,552.09	202,948.35		202,948.35
Lincoln	5,985.18	11,940.26	752.45	18,677.89	1,331.55	20,009.44	12,318.92	7,690.52	30.10	7,720.62
Linn	24,238.70	45,922.32	10,729.07	80,890.09	124.21	81,014.30	—7,097.34	88,111.64		88,111.64
Malheur	8,806.63	16,930.67	891.38	26,628.68	25,542.82	52,171.50	16,763.68	35,407.82		35,407.82
Marion	91,690.86	72,365.86	196,608.78	360,665.50	—31,049.41	329,616.09	—42,909.14	372,525.23		372,525.23
Morrow	7,968.56	15,115.27	47,269.24	70,353.07	6,395.58	76,748.65	10,574.08	66,174.57		66,174.57
Multnomah	113,858.07	112,498.87		226,356.94		226,356.94		226,356.94		226,356.94
Polk	14,855.45	25,340.55	1,456.66	41,652.66	—910.74	40,741.92	—956.89	41,698.81		41,698.81
Sherman	8,640.63	13,702.96	1,460.59	23,804.18	—22,666.57	1,137.61	—36,743.08	37,880.69		37,880.69
Tillamook	18,108.59	29,886.85	45,931.59	93,927.03	—11,672.73	82,254.30	—908.23	83,162.53		83,162.53
Umatilla	34,115.97	64,807.43	24,687.21	123,610.61	581.47	124,192.08	42,975.52	81,216.56		81,216.56
Union	32,836.07	28,387.03	2,473.25	63,696.35	36,978.48	100,674.83	18,298.63	82,376.20		82,376.20
Wallowa	10,283.24	13,493.61	17,363.64	41,140.49	9,089.23	50,229.72	5,978.73	44,250.99		44,250.99
Wasco	15,512.62	25,093.70	139.81	40,746.13	1,479.65	42,225.78	13,745.99	28,479.79		28,479.79
Washington	28,896.10	48,596.97	25,612.52	103,105.59	—40,840.11	62,265.48	—24,559.56	86,825.04		86,825.04
Wheeler	10,038.85	6,811.64		16,850.49	5,715.78	22,566.27	664.47	21,901.80		21,901.80
Yamhill	16,869.60	32,111.57	15.08	48,996.25	16,516.00	65,512.25	19,515.16	45,997.09		45,997.09
Totals	$ 809,472.87	$1,105,329.08	$ 626,872.76	$2,541,674.71	$127,228.79	$2,668,903.50	$ 108,094.64	$2,560,808.86	$ 1,161.32	$2,561,970.18

TABLE No. 32

SUMMARY OF COUNTY MARKET ROAD RECEIPTS AND CLASSIFICATION OF EXPENDITURES, 1929-1930 INCLUSIVE

The receipts listed in this table are for the full two-year period from January 1, 1929, to December 31, 1930. The expenditures are for the twenty-one month period.

County	County State Appropriation Funds Apportioned	County Market Funds Levies Collected	Other County Funds Expended on Market Roads	Total Funds Available for Market Roads	Total Funds Expended on Market Roads	Classification of Expenditures				
						New Construction and Betterment	Maintenance	Cooperation on Forest Highways	Major Bridges	Cooperation on State Highways
Baker	$ 63,350.94	$ 53,796.11	$ 1,395.83	$ 118,542.88	$ 118,770.42	$ 73,409.55	$ 15,785.24	$	$	$ 29,575.63
Benton	45,365.23	38,116.82	10,109.62	93,591.67	82,484.71	76,911.52	5,573.19			
Clackamas	143,096.06	150,000.02	131,255.62	424,351.70	433,708.36	367,740.71	27,542.16		38,425.49	
Clatsop	65,427.03	44,367.51	166,453.36	276,247.90	267,302.54	207,393.47	59,909.07			
Columbia	48,148.77	34,167.39	47,747.48	130,063.64	103,450.78	47,365.01	33,282.30		22,803.47	
Coos	73,142.45	76,604.33	35,710.76	185,457.54	204,436.86	167,596.73	36,840.13			
Crook	15,135.86	15,004.59	830.00	30,970.45	23,818.67	19,793.56	4,025.11			
Curry	12,248.93	15,347.16	2,175.82	29,771.91	20,319.15	17,812.77	2,506.38			
Deschutes	36,057.73	14,975.78	68.91	51,102.42	26,265.66	12,459.10	13,806.56			
Douglas	86,915.46	72,389.45	102,626.20	261,931.11	240,997.17	133,819.39	51,613.01		2,500.00	*53,064.77
Gilliam	27,077.41	20,026.06	49,673.74	96,777.21	81,771.91	60,306.76	21,465.15			
Grant	20,360.73	20,453.71	26,094.16	66,908.60	62,531.35	59,506.93	3,024.42			
Harney	24,057.68	23,721.93	7,948.16	55,727.77	76,542.65	61,303.42	8,065.55	1,973.68		5,200.00
Hood River	27,411.02	24,000.00	25.00	51,436.02	61,384.69	57,689.09	3,695.60			
Jackson	85,857.94	72,902.09	29,850.66	188,610.69	220,617.24	206,169.70	14,447.54			
Jefferson	14,488.17	15,635.21	2,535.31	32,658.69	27,570.96	26,458.44	1,112.52			
Josephine	21,487.44	27,000.00	9,406.61	57,894.05	48,515.76	30,071.88	18,443.88			
Klamath	95,182.85	69,456.86	455.16	165,094.87	195,290.98	178,135.64	12,867.56			4,287.78
Lake	28,829.78	30,476.12	88.87	59,394.77	43,652.57	43,069.15	583.42			
Lane	147,601.52	120,953.56	117,072.31	385,627.39	357,670.60	238,135.07	84,919.29		34,616.24	
Lincoln	23,890.62	23,972.61	10,774.30	58,637.53	49,646.81	43,160.99	6,485.82			
Linn	91,980.65	72,584.92	29,536.17	194,101.74	194,209.51	170,637.82	23,571.69			
Malheur	33,865.65	26,787.27	1,968.88	62,621.80	76,907.62	62,604.08	7,506.57		6,796.97	
Marion	141,976.34	166,690.86	363,804.60	672,471.80	684,331.53	589,571.31	55,297.14		39,463.08	
Morrow	30,355.81	22,637.46	93,302.46	146,295.73	147,395.52	137,605.24	9,790.28			
Multnomah	224,498.87	226,091.29		450,590.16	450,590.16	450,590.16				
Polk	51,193.51	43,311.01	1,456.66	95,961.18	87,300.56	77,381.52	9,919.04			
Sherman	27,429.90	34,411.63	1,460.59	63,302.12	82,158.02	75,555.82	6,602.20			
Tillamook	60,051.49	52,803.91	69,060.76	181,916.16	184,013.98	167,449.60	16,564.38			
Umatilla	129,412.55	98,439.70	50,794.72	278,646.97	197,986.86	170,422.86	27,564.00			
Union	55,909.48	84,478.08	2,572.06	142,959.62	151,691.37	133,140.73	14,129.60		4,421.04	
Wallowa	27,865.89	33,085.30	38,258.04	99,209.23	110,793.63	106,292.56	4,501.07			
Wasco	50,279.48	46,165.84	2,153.80	98,599.12	74,750.57	67,971.89	6,778.68			
Washington	97,783.84	82,788.97	91,404.07	271,976.88	251,788.83	189,971.99	51,439.58		10,377.26	
Wheeler	13,302.55	13,133.30		26,435.85	32,660.86	31,266.65	1,394.21			
Yamhill	64,481.94	48,042.65	20.52	112,545.11	106,435.97	89,174.70	17,261.27			
Totals	$2,205,521.57	$2,014,819.50	$1,498,091.21	$5,718,432.28	$5,579,764.83	$4,647,945.81	$ 678,313.61	$ 1,973.68	$ 159,403.55	$ 92,128.18

* Part of this amount was expended on the Drain-Reedsport federal aid highway.

TABLE No. 33

SUMMARY OF COUNTY MARKET ROAD RECEIPTS AND CLASSIFICATION OF EXPENDITURES, 1920-1930 INCLUSIVE

The receipts listed in this table include receipts for the full year 1930. The expenditures do not include expenditures made during the last three months of 1930.

County	State Appropriation Funds Apportioned	County Market Road Levies Collected	Other County Funds Expended on Market Roads	Total Funds Available for Market Roads	Total Funds Expended on Market Roads	Classification of Expenditures				
						New Construction and Betterment	Maintenance	Cooperation on Forest Highways	Major Bridges	Cooperation on State Highways
Baker	$ 350,099.15	$ 336,545.58	$ 112,620.51	$ 799,265.24	$ 789,832.72	$ 598,862.68	$ 36,375.41	$	$ 13,500.00	$ 141,094.63
Benton	227,191.29	216,492.37	29,007.32	472,690.98	453,420.07	309,161.69	13,748.38			130,510.00
Clackamas	661,863.56	665,818.86	1,358,149.22	2,685,831.64	2,695,188.30	2,583,096.11	65,621.70		38,425.49	8,045.00
Clatsop	434,744.84	397,208.11	410,146.39	1,242,099.34	1,218,574.40	1,109,339.73	109,234.67			
Columbia	267,043.14	300,943.14	314,553.24	882,539.52	850,581.59	775,269.72	42,903.50		32,408.47	
Coos	371,881.62	428,396.96	466,756.45	1,267,035.03	1,369,582.07	1,243,050.18	84,241.89			42,290.00
Crook	90,286.28	99,391.95	14,092.57	203,770.80	200,012.09	186,953.67	13,058.42			
Curry	62,845.07	65,388.81	8,605.26	136,839.14	135,754.90	129,579.62	6,175.28			
Deschutes	172,931.69	134,379.96	114,990.63	422,302.28	368,238.17	319,527.72	23,290.45			25,420.00
Douglas	446,850.11	450,603.99	346,017.97	1,243,472.07	1,237,172.71	808,288.33	89,319.51	125,009.00	154,200.00	* 60,355.87
Gilliam	158,603.03	161,039.61	58,694.63	378,337.27	355,500.84	324,125.04	24,007.80		7,368.00	
Grant	120,030.19	152,119.85	44,255.53	316,405.57	309,774.96	252,495.96	7,819.00			49,460.00
Harney	148,697.95	139,817.33	133,913.15	427,428.43	422,285.15	327,719.46	12,056.01	58,687.68		23,822.00
Hood River	155,149.61	168,163.66	2,725.50	326,038.77	341,968.32	329,615.27	12,353.05			
Jackson	448,872.77	474,588.87	83,687.80	1,007,149.44	985,239.80	957,626.49	27,613.31			
Jefferson	83,642.20	81,597.91	21,386.10	186,626.21	179,416.32	137,830.78	4,585.54			37,000.00
Josephine	121,354.92	177,820.34	36,356.13	335,531.39	326,153.10	292,041.12	34,111.98			
Klamath	358,017.46	383,159.00	193,857.50	935,033.96	935,702.67	877,460.20	35,458.85			22,783.62
Lake	159,498.58	165,627.52	47,683.08	372,809.18	348,687.29	236,913.99	5,269.30			106,504.00
Lane	692,502.59	635,838.68	369,518.28	1,697,859.55	1,707,411.64	1,158,793.97	294,393.43	34,891.00	116,436.24	102,897.00
Lincoln	127,131.93	133,393.82	34,527.64	295,053.39	282,734.47	268,621.14	14,113.33			
Linn	499,278.30	468,204.90	63,701.10	1,031,184.30	1,038,281.62	930,842.90	55,088.72			52,350.00
Malheur	222,712.99	200,900.60	3,435.39	427,048.98	410,538.57	315,075.68	24,522.92		6,796.97	64,143.00
Marion	711,873.09	770,904.94	1,183,555.64	2,666,333.67	2,653,699.70	2,429,401.44	115,138.18		109,160.08	
Morrow	169,808.98	165,208.66	511,524.75	846,542.39	835,968.31	665,037.52	13,737.79	82,193.00		75,000.00
Multnomah	1,168,676.79	1,149,881.08	138,246.46	2,456,804.33	2,456,804.33	2,456,804.33				
Polk	285,843.92	284,782.73	28,635.03	599,261.68	600,179.57	573,015.14	21,164.43		6,000.00	
Sherman	166,610.80	250,573.11	74,665.42	491,849.33	528,592.41	482,397.44	15,809.97			30,385.00
Tillamook	308,281.92	280,262.76	148,827.65	737,372.33	738,281.56	630,024.91	28,419.65		79,837.00	
Umatilla	716,392.14	668,495.13	119,338.92	1,504,226.19	1,461,250.67	1,200,916.40	64,240.27		59,708.00	136,386.00
Union	311,542.09	379,475.56	27,735.62	718,753.27	733,454.64	694,348.55	34,685.05		4,421.04	
Wallowa	181,731.42	190,166.96	137,046.35	508,944.73	502,966.00	418,474.37	9,614.63			74,877.00
Wasco	274,790.01	302,110.44	61,609.67	638,510.12	624,764.13	610,476.95	14,287.18			
Washington	506,037.80	519,169.24	354,050.53	1,379,257.57	1,403,817.13	1,305,794.11	87,645.76		10,377.26	
Wheeler	73,282.42	84,515.48	43,000.00	200,797.90	200,169.43	177,142.45	3,403.88	19,623.00		
Yamhill	345,002.24	341,228.57	17,497.79	703,728.60	684,213.44	643,121.39	41,092.05			
Totals	$11,601,102.89	$11,824,216.48	$ 7,119,415.22	$30,544,734.59	$30,386,213.09	$26,759,246.45	$1,484,601.29	$ 320,403.68	$638,638.55	$1,183,323.12

* Part of this amount was expended on the Drain-Reedsport federal aid highway.

TABLE No. 34

AMOUNTS OF SURPLUS MULTNOMAH COUNTY FUNDS APPORTIONED TO EACH COUNTY, 1920 to 1930, Inclusive

In this table are given the amounts that each county has received from the state market road fund in excess of the amounts contributed to the fund by the county.

County	1920-1926	1927	1928	1929	1930	Total
Baker	$ 61,272.99	$ 9,371.85	$ 9,070.01	$ 8,854.07	$ 8,881.84	$ 97,450.76
Benton	34,249.33	6,576.58	6,444.68	6,370.91	6,329.68	59,971.18
Clackamas	90,812.37	19,217.79	20,103.49	20,133.24	19,928.39	170,195.28
Clatsop	78,971.40	11,664.19	10,656.72	9,892.90	9,356.77	120,541.98
Columbia	60,364.95	2,656.47	7,164.10	6,822.24	6,657.66	83,665.42
Coos	55,162.15	10,749.03	10,654.51	10,346.84	10,130.37	97,042.90
Crook	17,384.94	2,343.42	2,203.86	2,117.38	2,120.10	26,169.70
Curry	10,483.34	1,741.10	1,669.50	1,699.67	1,729.57	17,323.18
Deschutes	22,003.18	4,927.48	4,965.11	4,916.99	5,177.80	41,990.56
Douglas	66,827.32	13,105.35	12,578.57	12,139.04	12,194.06	116,844.34
Gilliam	29,809.60	4,012.16	3,735.67	3,770.35	3,810.32	45,138.10
Grant	22,934.81	3,045.82	2,870.60	2,834.53	2,865.72	34,551.48
Harney	26,971.66	3,544.42	3,341.21	3,349.57	3,385.68	40,592.54
Hood River	28,647.40	4,149.91	3,976.51	3,858.08	3,816.00	44,447.90
Jackson	76,881.20	12,272.16	11,950.35	11,924.29	12,112.72	125,140.72
Jefferson	14,621.41	2,181.69	2,089.64	2,032.70	2,023.45	22,948.89
Josephine	22,085.02	3,254.43	3,132.25	2,992.53	3,023.15	34,487.38
Klamath	47,924.71	10,766.19	11,884.83	13,055.23	13,767.08	97,398.04
Lake	25,429.74	4,125.81	3,959.25	4,031.36	4,039.91	41,586.07
Lane	109,206.84	19,754.82	20,622.79	20,551.39	20,771.53	190,907.37
Lincoln	21,397.09	3,608.77	3,427.98	3,337.79	3,350.70	35,122.33
Linn	86,402.73	13,484.93	13,092.57	12,896.78	12,854.40	138,731.41
Malheur	41,905.82	5,399.93	4,921.28	4,741.96	4,739.17	61,708.16
Marion	121,466.39	19,796.04	19,492.53	19,491.61	20,256.38	200,502.95
Morrow	29,464.44	4,466.66	4,309.00	4,267.50	4,231.01	46,738.61
Multnomah	....	....	....	....	....	....
Polk	50,131.78	7,869.03	7,484.63	7,239.08	7,093.23	79,817.75
Sherman	31,294.97	4,129.95	3,889.74	3,843.68	3,835.68	46,994.02
Tillamook	53,821.03	6,968.56	8,754.79	8,446.39	8,365.81	86,356.58
Umatilla	124,870.88	19,063.28	18,404.77	18,090.06	18,140.65	198,569.64
Union	55,168.04	7,991.26	7,870.24	7,706.55	7,945.99	86,682.08
Wallowa	27,091.25	4,722.74	4,351.94	4,024.38	3,777.08	43,967.39
Wasco	49,037.35	7,267.44	7,519.16	7,052.26	7,024.13	77,900.34
Washington	84,057.55	14,482.30	14,104.18	13,772.80	13,603.08	140,019.91
Wheeler	11,619.13	1,869.34	1,789.92	1,817.52	1,906.69	19,002.60
Yamhill	51,353.46	6,339.03	9,310.85	9,064.02	8,988.55	85,055.91
Totals	$1,741,126.27	$276,919.93	$281,797.23	$277,485.69	$278,234.35	$2,855,563.47

TABLE No. 35

SUMMARY OF ADVANCES MADE TO COUNTIES IN THE FORM OF SERVICES, MATERIALS AND SUPPLIES FURNISHED FOR MARKET ROAD WORK—1920 to 1930, Inclusive

The amounts given in this table are the costs of the services, materials and supplies, furnished to the various counties by the State Highway Commission, at the request of the officials of the respective counties. The services furnished were principally engineering services in connection with market road surveys. Other major items were the rental of state-owned equipment and the furnishing of repair parts for county-owned equipment. For the services, materials and supplies thus furnished, the state received reimbursement by making deductions from the apportionments of state market road funds to the respective counties. The amounts are included in the preceding table of county expenditures.

County	1920-1926	1927	1928	1929	1930	Totals
Baker	$ 6,851.25	$	$	$	$	$ 6,851.25
Benton	395.43	......	......	......	......	395.43
Clackamas	5,349.16	......	......	......	......	5,349.16
Clatsop	361.88	......	......	......	......	361.88
Columbia	206.48	......	......	1.40	......	207.88
Coos	28.31	......	......	......	......	28.31
Crook	6,930.91	51.62	6.84	......	40.38	7,029.75
Curry	6,920.46	......	......	......	61.79	6,982.25
Deschutes	7,756.65	1,869.33	1,156.21	805.15	......	11,587.34
Douglas	2,062.37	548.76	1,769.20	569.09	......	4,949.42
Gilliam	11,008.45	......	......	......	......	11,008.45
Grant	38.56	......	......	......	......	38.56
Harney	11,661.78	15.70	4,962.73	3,056.14	1,029.05	20,725.40
Hood River	1,606.24	......	......	......	......	1,606.24
Jackson	25,249.70	......	......	......	......	25,249.70
Jefferson	2,844.47	......	......	......	......	2,844.47
Josephine	9,274.67	1,402.15	......	......	......	10,676.82
Klamath	9,869.62	......	......	......	......	9,869.62
Lake	7,751.36	......	1,156.61	289.84	......	9,197.81
Lane	267.15	......	......	......	......	267.15
Lincoln	23.55	......	......	......	30.10	53.65
Linn	62.72	......	......	......	......	62.72
Malheur	19,989.18	......	......	......	......	19,989.18
Marion	650.59	......	......	......	......	650.59
Morrow	14,318.14	2,285.59	......	......	......	16,603.73
Multnomah	......	......	......	......	......	......
Polk	5,266.63	......	......	......	......	5,266.63
Sherman	593.63	......	......	......	......	593.63
Tillamook	232.94	2,52	......	......	......	235.46
Umatilla	3,218.76	2.08	......	12.92	......	3,233.76
Union	5,435.80	......	......	......	......	5,435.80
Wallowa	232.46	......	......	......	......	232.46
Wasco	105.02	......	......	......	......	105.02
Washington	8,320.19	9.42	9.75	139.34	......	8,478.70
Wheeler	7,315.74	1,680.06	2,613.36	82.18	......	11,691.34
Yamhill	11,333.05	......	......	......	......	11,333.05
Totals	$193,533.30	$ 7,867.23	$11,674.70	$ 4,956.06	$ 1,161.32	$219,192.61

TABLE No. 36

SUMMARY OF EXPENDITURES MADE BY COUNTIES UNDER MARKET ROAD ACT, 1920-1930 INCLUSIVE

This table is compiled from information furnished by the officials of the respective counties. The amounts given include, in addition to the amounts expended directly by the counties, the costs of such services, materials and supplies as have been furnished to the counties by the State Highway Commission at the specific request of the county officials. Expenditures for 1930 are from January 1 to September 30, only.

County	1920-1926	1927	1928	1929	1930 (To Sept. 30)	1920-1930 (Inclusive)
Baker	$ 490,003.96	$ 92,063.30	$ 88,995.04	$ 65,090.18	$ 53,680.24	$ 789,832.72
Benton	273,119.79	51,695.64	46,119.93	47,076.66	35,408.05	453,420.07
Clackamas	1,730,333.02	289,281.55	241,865.37	261,000.31	172,708.05	2,695,188.30
Clatsop	660,370.53	144,041.00	146,860.33	160,203.04	107,099.50	1,218,574.40
Columbia	465,357.53	135,779.91	145,993.37	72,992.44	30,458.34	850,581.59
Coos	739,276.08	276,032.29	149,836.84	80,530.35	123,906.51	1,369,582.07
Crook	142,030.07	15,229.23	18,934.12	12,865.45	10,953.22	200,012.09
Curry	77,195.90	22,002.90	16,236.95	10,156.90	10,162.25	135,754.90
Deschutes	200,692.79	99,292.47	41,987.25	17,122.58	9,143.08	368,238.17
Douglas	627,616.84	150,147.70	218,411.00	131,245.89	109,751.28	1,237,172.71
Gilliam	220,482.31	26,639.62	26,607.00	75,551.18	6,220.73	355,500.84
Grant	187,977.72	27,588.86	31,677.03	26,985.91	35,545.44	309,774.96
Harney	237,420.02	37,441.44	70,881.04	37,253.34	39,289.31	422,285.15
Hood River	221,983.48	24,160.71	34,439.44	28,398.41	32,986.28	341,968.32
Jackson	610,650.32	75,172.38	78,799.86	145,955.84	74,661.40	985,239.80
Jefferson	111,269.11	17,931.37	22,644.88	18,958.24	8,612.72	179,416.32
Josephine	202,671.42	26,560.06	48,405.86	33,593.85	14,921.91	326,153.10
Klamath	423,132.12	98,743.96	218,535.61	76,879.07	118,411.91	935,702.67
Lake	245,788.79	30,528.87	28,717.06	28,637.28	15,015.29	348,687.29
Lane	898,714.22	149,564.73	301,462.09	154,722.25	202,948.35	1,707,411.61
Lincoln	192,440.28	18,257.44	22,389.94	41,926.19	7,720.62	282,734.47
Linn	662,362.26	65,197.51	116,512.34	106,097.87	88,111.64	1,038,281.62
Malheur	277,513.42	29,003.38	27,114.15	41,499.80	35,407.82	410,538.57
Marion	1,248,429.59	343,444.82	377,493.76	311,806.30	372,525.23	2,653,699.70
Morrow	429,547.77	121,324.32	137,700.70	81,220.95	66,174.57	835,968.31
Multnomah	1,560,409.02	220,363.50	225,441.65	224,233.22	226,356.94	2,456,804.33
Polk	408,310.76	36,304.89	68,263.36	45,601.75	41,698.81	600,179.57
Sherman	313,128.79	76,775.90	56,529.70	44,277.33	37,880.69	528,592.41
Tillamook	364,374.98	89,506.62	100,385.98	100,851.45	83,162.53	738,281.56
Umatilla	1,012,016.30	94,198.25	157,049.26	116,770.30	81,216.56	1,461,250.67
Union	431,884.01	91,560.36	58,318.90	69,315.17	82,376.20	733,454.64
Wallowa	308,840.80	60,039.37	23,292.20	66,542.64	44,250.99	502,966.00
Wasco	420,331.75	62,240.65	67,441.16	46,270.78	28,479.79	624,764.13
Washington	757,184.27	244,365.97	150,478.06	164,963.79	86,825.04	1,403,817.13
Wheeler	112,577.52	16,522.78	38,408.27	10,759.06	21,901.80	200,169.43
Yamhill	445,721.93	74,079.55	57,975.99	60,438.88	45,997.09	684,213.44
Totals	$17,711,159.47	$ 3,433,083.30	$ 3,662,205.49	$ 3,017,794.65	$ 2,561,970.18	$30,386,213.09

TABLE No. 37

EXPENDITURES FOR MAINTENANCE OF MARKET ROADS—YEARS 1925-1930

The amounts given in this table are as reported by county officials. Expenditures for 1930 are to October 1, 1930, and are not for a complete year. Only those counties for which entries are shown in the 1925 column, established market road maintenance organizations in 1925. In other counties, market roads were maintained as county roads. In all counties, prior to 1925, market roads were maintained as county roads.

County	1925	1926	1927	1928	1929	1930	1925-1930
Baker	$ 3,553.56	$ 3,408,12	$ 6,444.57	$ 7,183.92	$ 10,520.31	$ 5,264.93	$ 36,375.41
Benton	....	1,283.16	3,082.68	3,809.35	3,245.11	2,328.08	13,748.38
Clackamas	....	10,742.93	15,749.62	11,586.99	12,562.21	14,979.95	65,621.70
Clatsop	....	1,382.97	17,864.31	30,078.32	35,481.95	24,427.12	109,234.67
Columbia	....	2,241.33	3,241.49	4,138.38	14,818.18	18,464.12	42,903.50
Coos	....	18,193.53	16,588.68	12,619.55	22,777.47	14,062.66	84,241.89
Crook	....	3,311.81	3,218.98	2,502.52	2,157.91	1,867.20	13,058.42
Curry	247.00	748.48	1,819.17	854.25	908.59	1,597.79	6,175.28
Deschutes	....	3,060.00	3,360.00	3,063.89	4,663.48	9,143.08	23,290.45
Douglas	....	3,593.51	7,054.30	27,058.69	22,383.99	29,229.02	89,319.51
Gilliam	....	1,280.57	555.19	706.89	13,833.78	7,631.37	24,007.80
Grant	....	1,453.03	1,883.98	1,457.57	1,943.95	1,080.47	7,819.00
Harney	....	1,033.90	1,311.08	1,645.48	1,584.26	6,481.29	12,056.01
Hood River	....	1,542.04	1,364.59	5,750.82	1,991.67	1,703.93	12,353.05
Jackson	250.50	3,786.79	4,762.44	4,366.04	9,090.75	5,356.79	27,613.31
Jefferson	763.00	523.59	931.47	1,254.96	623.44	489.08	4,585.54
Josephine	....	3,174.62	6,390.59	6,102.89	9,952.20	8,491.68	34,111.98
Klamath	5,070.99	6,242.48	6,726.59	4,551.23	6,927.98	5,939.58	35,458.85
Lake	....	1,587.14	1,969.55	1,129.19	543.01	40.41	5,269.30
Lane	14,156.38	50,728.12	47,078.82	97,510.82	73,248.45	11,670.84	294,393.43
Lincoln	1,044.22	2,038.96	3,468.28	1,076.05	4,076.34	2,409.48	14,113.33
Linn	5,973.41	7,498.35	10,597.81	7,447.46	10,301.58	13,270.11	55,088.72
Malheur	621.95	3,938.61	9,484.50	2,971.29	3,459.05	4,047.52	24,522.92
Marion	....	8,509.17	22,573.58	28,758.29	26,899.58	28,397.56	115,138.18
Morrow	....	430.00	1,196.22	2,321.29	3,620.81	6,169.47	13,737.79
Multnomah	....	....	....	....	....	....	....
Polk	....	2,047.55	4,220.34	4,977.50	4,296.60	5,622.44	21,164.43
Sherman	....	1,266.45	2,342.48	5,598.84	5,141.61	1,460.59	15,809.97
Tillamook	....	1,150.00	1,760.00	8,945.27	6,791.07	9,773.31	28,419.65
Umatilla	1,238.44	11,675.69	11,855.63	11,906.51	10,310.03	17,253.97	64,240.27
Union	1,848.69	4,910.39	6,446.22	7,350.15	8,207.87	5,921.73	34,685.05
Wallowa	725.70	711.56	1,591.25	2,085.05	2,513.66	1,987.41	9,614.63
Wasco	....	3,000.00	3,019.59	1,488.91	3,730.05	3,048.63	14,287.18
Washington	1,439.51	3,021.74	10,254.27	21,490.66	24,204.44	27,235.14	87,645.76
Wheeler	....	918.33	639.00	452.34	431.25	962.96	3,403.88
Yamhill	1,734.31	4,581.41	7,979.79	9,535.27	10,360.78	6,900.49	41,092.05
Total	$ 38,667.66	$ 175,016.33	$ 248,827.06	$ 343,776.63	$ 373,603.41	304,710.20	$1,484,601.29

TABLE No. 38

MILEAGES OF MARKET ROAD CONSTRUCTION WORK ACCOMPLISHED UNDER MARKET ROAD ACT, YEARS 1920 to 1930, INCLUSIVE

County	1920-1928			1929-1930				1920-1930			
	Grading	Rock or Gravel Surfacing	Paving	Grading	Rock or Gravel Surfacing	Oiling	Paving	Grading	Rock or Gravel Surfacing	Oiling	Paving
Baker	51.37	51.37	....	22.75	15.95	....	....	74.12	67.32	....	....
Benton	38.33	38.33	....	7.79	7.79	....	....	46.12	46.12	....	....
Clackamas	233.84	83.15	141.19	22.62	23.90	31.89	5.07	256.46	107.05	38.58	146.26
Clatsop	45.60	18.00	14.90	4.00	16.40	....	....	49.60	34.40	....	14.90
Columbia	79.19	72.11	1.20	5.86	6.69	4.85	....	85.05	78.80	4.85	1.20
Coos	175.82	149.42	....	16.58	32.58	....	....	192.40	182.00	....	....
Crook	62.14	43.44	....	17.53	....	....	....	79.67	43.44	....	....
Curry	15.07	13.23	....	4.68	2.68	....	....	19.75	15.91	....	....
Deschutes	114.03	2.92	0.14	8.83	....	....	....	122.86	2.92	....	0.14
Douglas	84.30	100.66	6.70	17.73	27.03	1.60	....	102.03	127.69	1.60	6.70
Gilliam	31.80	26.10	....	14.15	14.14	....	....	45.95	40.24	....	....
Grant	36.87	1.94	....	7.99	17.56	....	....	44.86	19.50	....	....
Harney	62.18	21.50	....	22.40	2.75	....	....	84.58	24.25	....	....
Hood River	27.04	22.84	4.20	5.23	5.23	0.61	....	32.27	28.07	0.61	4.20
Jackson	64.09	63.49	8.40	17.60	16.09	11.93	....	81.69	79.58	11.93	8.40
Jefferson	54.49	40.74	....	23.16	2.00	....	....	77.65	42.74	....	....
Josephine	40.63	40.63	....	3.77	3.77	1.00	....	44.40	44.40	1.00	....
Klamath	72.59	77.89	....	19.00	27.66	13.60	....	91.59	105.55	13.60	....
Lake	11.40	11.40	....	5.21	....	....	....	16.61	11.40	....	....
Lane	130.85	128.68	....	39.29	55.23	101.50	....	170.14	183.91	101.50	....
Lincoln	30.46	21.37	....	6.69	14.52	....	....	37.15	35.89	....	....
Linn	148.36	143.90	....	27.78	32.24	24.20	....	176.14	176.14	24.20	....
Malheur	44.08	29.28	....	20.62	0.42	11.28	....	64.70	29.70	11.28	....
Marion	188.54	111.06	91.33	83.08	83.08	....	16.37	271.62	194.14	....	107.70
Morrow	62.11	61.23	....	40.55	33.16	....	....	102.66	94.39	....	....
Multnomah	....	....	....	....	....	....	....	....	....	....	....
Polk	68.33	71.49	1.75	20.03	18.63	6.00	....	88.36	90.12	6.00	1.75
Sherman	120.14	120.14	....	13.38	13.38	....	....	133.52	133.52	....	....
Tillamook	43.27	35.77	2.70	21.23	23.93	....	....	64.50	59.70	....	2.70
Umatilla	156.67	149.06	....	58.31	50.87	....	....	214.98	199.93	....	....
Union	96.53	80.17	....	21.18	18.37	....	....	117.71	98.54	....	....
Wallowa	61.43	19.69	....	44.86	22.98	....	....	106.29	42.67	....	....
Wasco	115.30	95.05	....	11.03	7.42	2.00	....	126.33	102.47	10.06	....
Washington	116.06	65.55	3.88	34.01	35.68	13.57	....	150.07	101.23	43.89	3.88
Wheeler	13.90	11.30	....	3.77	3.77	....	....	17.67	15.07	....	....
Yamhill	87.55	88.06	0.53	12.81	17.18	....	....	100.36	105.24	....	0.53
Totals	2,784.36	2,110.96	276.92	705.50	653.08	224.03	21.44	3,489.86	2,764.04	269.10	298.36

TABLE No. 39

MILEAGES IN COUNTY MARKET ROAD SYSTEMS

The mileages given in this table are included also in the table of county and mileages given on page 153.

County	Total Mileage	Miles of Different Types of Improvement					
		Paved With Bituminous Pavement	Paved With Concrete Pavement	Oiled Rock or Gravel Surfacing	Unoiled Rock or Gravel Surfacing	Graded to Market Road Standards	Not Graded to Market Road Standards
Baker	109.16	....	....	....	61.70	6.80	40.66
Benton	46.12	....	....	....	46.12	....	....
Clackamas	293.30	72.82	73.44	38.58	68.47	3.15	36.84
Clatsop	88.60	1.60	30.30	....	34.40	5.14	17.16
Columbia	126.30	....	1.20	4.85	78.80	....	41.45
Coos	223.80	....	....	....	184.50	7.90	31.40
Crook	95.73	....	....	....	43.44	36.23	16.06
Curry	71.65	....	....	....	15.91	3.84	51.90
Deschutes	196.82	.14	....	....	2.92	119.80	73.96
Douglas	283.10	.40	6.30	1.60	235.10	2.00	37.70
Gilliam	184.60	....	....	....	40.24	5.71	138.65
Grant	99.40	....	....	....	49.56	18.59	31.25
Harney	336.50	....	....	....	49.30	62.70	224.50
Hood River	36.46	....	4.20	.61	27.46	....	4.19
Jackson	128.31	8.45	....	11.93	66.51	4.18	37.24
Jefferson	113.30	....	....	....	34.91	42.74	35.65
Josephine	52.90	....	....	1.00	43.40	....	8.50
Klamath	138.72	....	....	13.60	113.92	11.20	....
Lake	93.00	....	....	....	11.40	8.21	73.39
Lane	501.40	....	....	86.80	293.30	27.90	93.40
Lincoln	44.80	....	....	....	38.30	....	6.50
Linn	297.20	....	....	24.20	270.60	....	2.40
Malheur	121.90	....	....	11.28	29.70	23.72	57.20
Marion	442.15	175.98	....	....	182.46	....	83.71
Morrow	170.74	....	....	....	94.39	8.27	68.08
Multnomah	....	....	....	....	....	....	....
Polk	126.10	2.50	....	6.00	117.60	....	....
Sherman	133.52	....	....	....	83.89	....	49.63
Tillamook	116.40	....	2.70	....	59.70	3.10	50.90
Umatilla	303.50	....	....	....	185.93	15.55	102.02
Union	190.46	....	....	....	98.54	18.17	73.75
Wallowa	270.57	....	....	....	63.62	42.67	164.28
Wasco	176.03	....	....	10.06	92.41	23.86	49.70
Washington	199.11	3.88	....	43.89	101.23	1.07	49.04
Wheeler	53.00	....	....	....	15.07	2.60	35.33
Yamhill	161.87	.50	7.00	....	117.17	....	37.20
Totals	6,029.52	266.27	125.14	254.40	3,052.97	505.10	1,825.64

TABLE No. 40

MILEAGES OF MARKET ROADS MAINTAINED, 1926-1930

The mileages given in this table are as reported by the officials of the respective counties.

County	1926	1927	1928	1929	1930
Baker	34.65	34.66	50.46	52.42	61.56
Benton	26.52	30.38	35.13	35.13	38.05
Clackamas	171.50	251.00	260.00	234.00	243.35
Clatsop	29.40	48.80	32.00	70.25	76.25
Columbia	20.33	32.83	57.30	75.05	75.05
Coos	149.00	150.70	158.00	183.70	185.70
Crook	51.00	58.50	74.00	70.00	69.00
Curry	10.30	12.51	9.60	12.24	17.89
Deschutes	43.33	47.73	107.80	107.80	122.37
Douglas	27.30	56.70	196.20	212.50	237.60
Gilliam	26.30	26.30	26.30	38.10	44.30
Grant	29.80	33.00	30.44	45.24	48.42
Harney	57.50	57.00	69.00	69.00	90.60
Hood River	9.10	10.90	15.80	17.30	20.40
Jackson	48.20	48.20	57.50	64.40	84.90
Jefferson	47.50	47.50	51.00	51.50	72.00
Josephine	35.60	36.30	40.80	40.80	39.70
Klamath	82.00	89.40	89.20	127.22	116.70
Lake	12.00	11.90	11.90	14.25	14.25
Lane	295.40	319.10	292.60	322.30	324.10
Lincoln	17.90	16.00	23.30	32.00	44.00
Linn	68.80	86.70	93.20	110.75	124.50
Malheur	63.50	65.00	74.60	93.33	94.36
Marion	162.65	195.75	242.50	277.39	309.26
Morrow	21.80	36.80	43.73	67.13	76.33
Multnomah	....	....	....	....	....
Polk	21.30	42.30	46.35	50.80	67.10
Sherman	31.80	39.79	59.33	60.44	60.44
Tillamook	10.60	11.50	26.50	45.50	49.65
Umatilla	127.18	134.11	133.23	144.25	159.42
Union	72.19	78.54	84.03	81.64	93.14
Wallowa	26.30	37.52	45.32	52.05	64.36
Wasco	61.52	61.52	54.89	94.98	94.98
Washington	28.86	57.97	86.76	106.51	139.13
Wheeler	13.10	22.00	16.00	24.00	24.00
Yamhill	53.00	79.42	86.48	105.37	105.37
Totals	1,987.23	2,368.33	2,781.25	3,189.34	3,488.23

VIEWS OF AND IN STATE PARKS: UPPER—HUMBUG MOUNTAIN SOUTH OF PORT ORFORD; CENTER—LAVA CAVES PARK SOUTH OF BEND; LOWER—PETER SKENE OGDEN PARK ON CROOKED RIVER NORTH OF REDMOND

TABLE No. 41

MAINTENANCE PATROL STATION SITES AND SHOP SITES ACQUIRED BY STATE HIGHWAY COMMISSION

During Period December 1, 1928, to September 30, 1930

County	Purpose for Which Acquired	Area in Acres	Approximate Location	Legal Description	From Whom Acquired	How Acquired	Consideration
Baker	Patrol Station Site	0.997	Old Oregon Trail in Baker	In S. ½ of NW. ¼ of Sec. 21, T. 9 S., R. 40 E., W. M.	A. R. Zeller, Portland	Purchase	$ 600.00
Coos	Shop Site	0.23	Roosevelt Coast Highway at Coquille	In Lot 7 of Sec. 1, T. 28 S., R. 13 W., W. M.	Caroline Lorenz	Purchase	650.00
Deschutes	Patrol Station Site	0.459	McKenzie Highway in Redmond	Block 72, original town of Redmond	Deschutes County	Purchase	67.00
Grant	Patrol Station Site	1.212	John Day Highway in Town of John Day	In NE. ¼ of NE. ¼ of Sec. 26, T. 13 S., R. 31 E., W. M.	Chas. Trowbridge and wife	Purchase	300.00
Harney	Patrol Station Site	1.00	Central Oregon Highway in Burns	In NE. ¼ of NW. ¼ of Sec. 18, T. 23 S., R. 31 E., W. M.	C. H. Voegtly and wife, Burns	Purchase	400.00
Hood River	Patrol Station Site	1.00	Columbia River Highway at Cascade Locks	In Lots 9 and 10 of Sec. 12, T. 2 N., R. 7 E., W. M.	F. J. McGettigan and wife	Purchase	700.00
Jackson	Patrol Station Site	0.249	Pacific Highway near Siskiyou Station	In NE. ¼ of SE. ¼ of Sec. 20, T. 40 S., R. 2 E., W. M.	Ross Tilley and wife	Purchase	24.90
Klamath	Patrol Station Site	0.895	Klamath Falls-Lakeview Highway in Beatty	Lots 1, 2, 3, 14, 15, 16 of Block 3, Town of Beatty	Frank J. Schmitz and wife	Purchase	12.50
Klamath	Patrol Station Site	1.73	Green Springs Highway near Spencer Station	In SW. ¼ of NE. ¼ of Sec. 1, T. 40 S., R. 6 E., W. M.	W. B. Spencer, Keno	Purchase	188.00
Sherman	Patrolman's Quarters	....	Columbia River Highway in Town of Rufus	Lot 6, Block 19 of Rufus townsite	J. A. Weatherford, Rufus	3-year lease expires July 15, 1932	18.00 month
Tillamook	Patrol Station Site	....	Roosevelt Coast Highway in Hebo	In NW. ¼ of NW. ¼ of Sec. 13, T. 4 S., R. 10 W., W. M.	Millie C. Sappington, Cloverdale	Purchase	600.00
Umatilla	Patrol Station Site	....	Old Oregon Trail in Pendleton	Part of Blocks 19, 20 and 21 of Byers Addition to Pendleton	City of Pendleton	Purchase	800.00

TABLE No. 42

PARK SITES AND RECREATIONAL AREAS ACQUIRED FOR THE STATE BY THE STATE HIGHWAY COMMISSION

During Period December 1, 1928, to September 30, 1930

County	Purpose for Which Acquired	Area in Acres	Approximate Location	Legal Description	From Whom Acquired	How Acquired	Consideration
Clackamas	Park Site	120.00	Mt. Hood Highway at Wildcat Creek	In S. ½ of S. ½ of Sec. 21, T. 2 S., R. 6 E., W. M.	U. S. Government	Lease under terms of Recreational Act	$ 75.60
Clatsop	Saddle Mtn. Park Site	1,280.00	On County Road southeast of Astoria	In Secs. 29, 32, 33, 34, T. 6 N., R. 8 W., W. M.	O. W. Taylor and wife	Gift	....
Curry	Battle Rock Park Site	....	Roosevelt Coast Highway at Port Orford	Part of Block 29 of original plat of Port Orford	F. F. Friant, Port Orford, Or.	Purchase	2,500.00
Curry	Battle Rock Park Site	....	Roosevelt Coast Highway at Port Orford	Part of Block 29 of original plat of Port Orford	Geo. E. Waters, Salem, Oregon	Purchase	511.00
Curry	Battle Rock Park Site	....	Roosevelt Coast Highway at Port Orford	Part of Blocks 28 and 29 of original plat of Port Orford	Willis T. White, Sr., Port Orford	Purchase	736.51
Curry	Battle Rock Park Site	....	Roosevelt Coast Highway at Port Orford	Lot 4 of Block 29 of original plat of Port Orford	Elva B. McGraw, Oakland, California	Purchase	400.00
Curry	Park Site	160.00	Roosevelt Coast Highway, 2 miles north of Sixes	In NW. ¼ of Sec. 34 and NE. ¼ of Sec. 33, T. 31 S., R. 15 W., W. M.	Port Orford Commercial Company	Purchase	2,400.00
Curry	Park Site	120.00	At Humbug Mountain	In N. ½ of N. ½ of Sec. 36, T. 33 S., R. 15 W., W. M.	Mrs. M. H. True Brown	Purchase	1,200.00
Curry	Park Site	6.00	Roosevelt Coast Highway, 2½ miles south of Gold Beach	Lot 1 of Sec. 13, T. 37 S., R. 15 W., W. M.	Fred J. Caughell & wife, Gold Beach, Oregon	Purchase	300.00
Curry	Park Site	160.00	Roosevelt Coast Highway at Humbug Mountain	S. ½ of SW. ¼ of Sec. 25 and S. ½ of SE. ¼ of Sec. 26,, T. 33 S., R. 15 W., W. M.	Geo. E. Haney, Santa Barbara, Cal.	Purchase	1,600.00
Douglas	Park Site	120.00	Roosevelt Coast Highway, 1½ miles south of Winchester Bay	S. ½ of SW. ¼ of Sec. 13 and lot 3 of Sec. 14, T. 22 S., R. 13 W., W. M.	Douglas County	Gift	....
Douglas	Park Site	80.00	Roosevelt Coast Highway, 3 miles south of Winchester Bay	E. ½ of SE. ¼ of Sec. 25, T. 22 S., R. 13 W., W. M.	Douglas County	Gift	....
Grant	Scenic Area	1.50	John Day Highway, 7 miles east of Dayville	In SW. ¼ of SE. ¼ of Sec. 7, T. 13 S., R. 28 E., W. M.	Eastern Oregon Land Company	Gift	....
Hood River	Dimmick Park	18.10	Mt. Hood Highway, 15 miles south of Hood River	In NW. ¼ of NE. ¼ of Sec. 33, T. 1 N., R. 10 E., W. M.	Ziba Dimmick, Walla Walla, Wash.	Purchase	1,000.00

Lane	Park Site	162.85	Roosevelt Coast Highway at Woahink Lake	Lots 1, 2, 3, 4 of Sec. 11 and Lots 11, 12 of Sec. 14, all of T. 19 S., R. 12 W., W. M.	Rena Robinson, Corvallis, Oregon	Purchase	5,000.00
Lincoln	Parking Area	0.24	Roosevelt Coast Highway at Seal Rocks	In Block 8 of Seal Rocks Resort	Lincoln County	Gift	....
Lincoln	Park Site	2.90	Roosevelt Coast Highway at DePoe Bay	In Secs. 5, 8, T. 9 S., R. 11 W., W. M.	Sunset Investment Co., Portland	Gift	....
Multnomah	Guy W. Talbot Park Site	125.00	Columbia River Highway at Latourelle Falls	In Sec. 29, T. 1 N., R. 5 E., W. M.	Guy W. Talbot and wife, Portland	Gift	....
Umatilla	Timber Reserve in Blue Mtns.	21.84	Old Oregon Trail in Blue Mountains	In SW. ¼ of NE. ¼ of Sec. 1, T. 1 N., R. 34 E., W. M.	Joseph Minthorn Estate, Umatilla Indian	Purchase	587.45
Umatilla	Timber Reserve	370.07	Pendleton-John Day Highway, about 9 miles north of Ukiah	In Secs. 20, 29, 30, 31, T. 3 S., R. 31 E., W. M., and Sec. 4 of T. 4 S., R. 31 E., W. M.	Cunningham Sheep & Land Co. and Cunningham Sheep Co.	Purchase	5,051.05
Umatilla	Timber Reserve in Blue Mtns.	32.69	Old Oregon Trail in Blue Mountains	In NE. ¼ of Sec. 6, T. 1 N., R. 35 E., W. M.	Martha Kirk and husband, Adams, Oregon	Purchase	700.00
Umatilla	Timber Reserve in Blue Mtns.	4.28	Old Oregon Trail in Blue Mountains	In NE. ¼ of SE. ¼ of Sec. 29, T. 1 N., R. 35 E., W. M.	Smythe Brothers, Inc., Pendleton	Purchase	42.80
Umatilla	Timber Reserve in Blue Mtns.	25.37	Old Oregon Trail in Blue Mountains	In SE. ¼ of SW. ¼ of Sec. 28, T. 1 N., R. 35 E., W. M.	L. J. Palmateer and wife	Purchase	1,000.00
Umatilla	Timber Reserve in Blue Mtns.	3.75	Old Oregon Trail in Blue Mountains	In NW. ¼ of NW. ¼ of Sec. 9, T. 1 N., R. 35 E., W. M.	Arlington Garage Co., Arlington, Oregon	Purchase	30.00
Umatilla	Timber Reserve in Blue Mtns.	15.47	Old Oregon Trail in Blue Mountains	In W. ½ of NW. ¼ of Sec. 16, T. 1 N., R. 35 E., W. M.	Charles H. Weeks and wife	Purchase	309.40
Union	Timber Reserve in Blue Mtns.	61.93	Old Oregon Trail, 1½ miles west of Hilgard	In Sec. 36, T. 2 S., R. 36 E., W. M.	Duncan McDonald and wife, La Grande	Purchase	402.55
Wallowa	Timber Reserve	110.33	Wallowa Lake Highway, between Minam and Wallowa	In Secs. 26, 35, 36, T. 2 N., R. 41 E., W. M., and Sec. 31, T. 2 N., R. 42 E., W. M.	Ernest F. Johnson and wife, Wallowa	Gift (pay for timber only)	500.00
Wasco	Parking Area	5.07	Wapinitia Highway at Junction with The Dalles-California Highway	In NW. ¼ of NE. ¼ of Sec. 1, T. 5 W., R. 13 E., W. M.	Adolphus E. Mayhew, Maupin, Ore.	Purchase	507.00
Wheeler	Shelton Park	176.62	John Day Highway, 11 miles south of Fossil	In Secs. 3, 4, 9, 10, T. 8 S., R. 22 E., W. M.	Kinzua Lumber Co., Santa Barbara, Cal.	Purchase	5,000.00

TABLE No. 43

RIGHTS OF WAY ACQUIRED BY STATE HIGHWAY COMMISSION

During Period December 1, 1928, to September 30, 1930

County	Purpose for Which Acquired	Area in Acres	Approximate Location	Legal Description	From Whom Acquired	How Acquired	Consideration
Baker	Right of Way	1.11	Old Oregon Trail near Quartz Station	In NW. ¼ of SE. ¼ of Sec. 7, T. 10 S., R. 41 E., W. M.	Shirden G. Miller	Purchase	$ 25.00
Baker	Right of Way	0.67	Old Oregon Trail near Quartz Station	In SE. ¼ of SE. ¼ of Sec. 7, T. 10 S., R. 41 E., W. M.	Shirden G. Miller	Purchase	25.00
Baker	Right of Way	2.85	Old Oregon Trail east of Baker	In Lot 2 and SE. ¼ of NW. ¼ of Sec. 7, T. 10 S., R. 41 E., W. M.	W. A. Gossett, Baker	Purchase	500.00
Baker	Right of Way	1.50	Old Oregon Trail near Quartz Station	In NE. ¼ of SW. ¼ of Sec. 7, T. 10 S., R. 41 E., W. M.	Zoe A. Stephenson, Baker	Purchase	75.00
Baker	Right of Way for Drainage Ditch	4.79	Old Oregon Trail, 1 mile north of Haines	In W. ½ of Sec. 28, T. 7 S., R. 39 E., W. M.	Edward W. Coles and wife	Purchase	527.00
Baker	Right of Way for Drainage Ditch	0.74	Old Oregon Trail, 1½ miles north of Haines	In SW. ¼ of SW. ¼ of Sec. 21, T. 7 S., R. 39 E., W. M.	Edward W. Coles and wife	Purchase	74.00
Baker	Right of Way for Snow Fence	3.79	Baker-Unity Highway, between Unity and Hereford	In E. ½ of E. ½ of Sec. 32 and NW. ¼ Sec. 33, T. 12 S., R 37 E., W. M.	Otto Paustian and wife	Purchase	93.75
Baker	Right of Way	1.20	Old Oregon Trail, between Pleasant Valley and Durkee	In E. ½ of E. ½ of Sec. 18, T. 11 S., R. 43 E., W. M.	T. P. Moore and wife	Purchase	100.00
Baker	Right of Way	1.03	Old Oregon Trail, between North Powder and Haines	In SW. ¼ of SW. ¼ of Sec. 21, T. 7 S., R. 39 E., W. M.	Edward W. Coles and wife	Purchase	Constructing fence
Baker	Right of Way	6.72	Old Oregon Trail, between North Powder and Haines	In W. ½ of Sec. 28, T. 7 S., R. 39 E., W. M.	Edward W. Coles and wife	Purchase	Constructing fence
Baker	Right of Way	1.06	Old Oregon Trail, between Pleasant Valley and Durkee	In Secs. 29, 30 and 32, T. 10 S., R. 42 E., W. M.	Christian Jensen and wife	Purchase	10.60
Baker	Right of Way	0.42	Old Oregon Trail, between Pleasant Valley and Durkee	In NW. ¼ of SW. ¼ of Sec. 1, T. 11 S., R. 42 E., W. M.	Baker County	Gift	....
Baker	Right of Way	0.21	Old Oregon Trail at Unity Station	In SW. ¼ of SW. ¼ of Sec. 1, T. 11 S., R. 42 E., W. M.	Frank C. Pearce and wife	Purchase	50.00

Baker	Right of Way	4.36	Old Oregon Trail, between Pleasant Valley and Durkee	In Secs. 1, 2 and 12, T. 11 S., R. 42 E., and Sec. 7, T. 11 S., R. 43 E., W. M.	Frank C. Pearce and wife	Purchase	820.91
Baker	Right of Way for Snow Fence	3.11	Baker-Unity Highway, between Unity and Hereford	In SW. ¼ and SE. ¼ of NW. ¼ of Sec. 28, T. 12 S., R. 37 E., W. M.	Michael Rouse and wife and John Rouse	Purchase	171.05
Baker	Right of Way for Drainage Ditch	1.02	Old Oregon Trail, 1½ miles north of Haines	In SE. ¼ of SW. ¼ of Sec. 21, T. 7 S., R. 39 E., W. M.	Chas. Kent	Purchase	100.00
Clackamas	Right of Way	0.28	Mt. Hood Highway at Woodlawn Park Subdivision	In NW. ¼ of Sec. 3, T. 3 S., R. 7 E., W. M.	John M. V. Bilyeu and wife	Purchase	400.00
Clackamas	Right of Way	0.039	Mt. Hood Highway near Forest Boundary	In NE. ¼ of NE. ¼ of Sec. 23, T. 3 S., R. 8½ E., W. M.	Mrs. M. L. Morrison	Purchase	62.50
Clackamas	Right of Way	0.381	Mt. Hood Highway between Multnomah County Line and Sandy	In NE. ¼ of Sec. 32, T. 1 S., R. 4 E., W. M.	Thomas G. Hale and wife	Purchase	161.00
Clackamas	Right of Way	0.646	Mt. Hood Highway between Multnomah County Line and Sandy	In NE. ¼ of Sec. 32, T. 1 S., R. 4 E., W. M.	George W. Hale and wife	Purchase	252.40
Clackamas	Right of Way	0.324	Mt. Hood Highway between Multnomah County Line and Sandy	In NE. ¼ of Sec. 32, T. 1 S., R. 4 E., W. M.	Arabelle Hale	Purchase	260.00
Clackamas	Right of Way	1.07	Mt. Hood Highway between Multnomah County Line and Sandy	In S. ½ of Sec. 10, T. 2 S., R. 4 E., W. M.	Mrs. Dora Jerger	Purchase	255.00
Clackamas	Right of Way	....	Pacific Highway north of Oswego	Part of Block 90 of Dunthorpe Addition	Mrs. Mildred A. Gordon	Purchase	425.00
Clackamas	Right of Way	....	Pacific Highway north of Oswego	Part of Tract 6 of Elk Rock Villas	J. H. Willman and wife	Purchase	50.00
Clackamas	Right of Way	....	Pacific Highway north of Oswego	Part of Block 90 of Dunthorpe Addition	Security Savings & Trust Co.	Purchase	152.14
Clackamas	Right of Way	....	Pacific Highway at Oswego	Lot 6 at 1st and "D" streets, Oswego	C. S. Snyder and wife	Purchase	50.00
Clackamas	Right of Way	....	Pacific Highway north of Oswego	In Block 89 of Dunthorpe Addition	Donald G. Bates and wife	Purchase	850.00
Clackamas	Right of Way	....	Pacific Highway north of Oswego	In Sec. 3, T. 2 S., R. 1 E., W. M.	Ida W. Gray and husband	Purchase	2,850.00
Clackamas	Right of Way	....	Pacific Highway north of Oswego	In Sec. 3, T. 2 S., R. 1 E., W. M.	J. N. Webster and wife	Purchase	2,500.00
Clackamas	Right of Way	1.372	Pacific Highway between Canemah and New Era	In Secs. 1, 2 and 11, T. 3 S., R 1 E., W. M.	Crown Willamette Paper Company	S. P. Ry. Co. Exchange	....

TABLE No. 43—Continued

County	Purpose for Which Acquired	Area in Acres	Approximate Location	Legal Description	From Whom Acquired	How Acquired	Consideration
Clackamas	Right of Way	....	Pacific Highway north of Oswego	In Block 11 of Dunthorpe Addition	Frank V. Cook and wife	Purchase	500.00
Clackamas	Right of Way	0.21	Pacific Highway between Canemah and New Era	In SE. ¼ of Sec. 2, T. 3 S., R. 1 E., W. M.	Louis G. Criteser and wife	S. P. Ry. Co. Exchange	....
Clackamas	Right of Way	0.07	Pacific Highway between Canemah and New Era	In SE. ¼ of Sec. 2, T. 3 S., R. 1 E., W. M.	E. C. Corn and wife	S. P. Ry. Co. Exchange	....
Clackamas	Right of Way	0.15	Pacific Highway between Canemah and New Era	In NW. ¼ of Sec. 23, T. 3 S., R. 1 E., W. M.	W. G. Dustin and wife and John A. Thompson and wife	S. P. Ry. Co. Exchange	....
Clackamas	Right of Way	0.20	Pacific Highway between Canemah and New Era	In Secs. 14 and 15, T. 3 S., R. 1 E., W. M.	Doernbecher Manufacturing Co.	S. P. Ry. Co. Exchange	....
Clackamas	Right of Way	....	Pacific Highway north of Oswego	In Block 9 of Dunthorpe Addition	Frank E. Fey and wife	Purchase	600.00
Clackamas	Right of Way	....	Pacific Highway north of Oswego	In Lot 9 of Arcadia Addition	R. R. Knox and wife	Purchase	550.00
Clackamas	Right of Way	0.08	Pacific Highway between Canemah and New Era	In NW. ¼ of Sec. 23, T. 3 S., R. 1 E., W. M.	David McArthur and wife	S. P. Ry. Co. Exchange	....
Clackamas	Right of Way	0.143	Pacific Highway between Canemah and New Era	In NW. ¼ of Sec. 1, T. 3 S., R. 1 E., W. M.	Leon L. McFarland and wife	S. P. Ry. Co. Exchange	....
Clackamas	Right of Way	0.80	Pacific Highway between Canemah and New Era	In Secs. 15 and 22, T. 3 S., R. 1 E., W. M.	New Era Land & Investment Co.	S. P. Ry. Co. Exchange	....
Clackamas	Right of Way	0.27	Pacific Highway between Canemah and New Era	In NW. ¼ of Sec. 1, T. 3 S., R. 1 E., W. M.	W. W. Quinn Estate	S. P. Ry. Co. Exchange	....
Clackamas	Right of Way	....	Pacific Highway north of Oswego	In Block 13 of Dunthorpe Addition	Willis W. Ross and wife	Purchase	300.00
Clackamas	Right of Way	....	Pacific Highway north of Oswego	In Block 12 of Dunthorpe Addition	C. M. Tulley and wife	Purchase	200.00
Clackamas	Right of Way	....	Pacific Highway north of Oswego	In Lot 11 of Arcadia Addition	Marietta U. Van Meter	Purchase	875.00
Clatsop	Right of Way	0.22	Roosevelt Coast Highway near Skipanon	In NW. ¼ of NE. ¼ of Sec. 26, T. 8 N., R. 10 W., W. M.	W. L. Corrigan Estate	Purchase	60.00
Clatsop	Right of Way	21.26	Columbia River Highway between Svenson and Clatsop Crest	In Sec. 19, T. 8 N., R. 6 W., W. M., and in Secs. 13, 14, and 24, T. 8 N., R. 7 W., W. M.	W. C. Stumberg and wife and James J. O'Keane and wife	Purchase	300.00
Clatsop	Right of Way	0.41	Columbia River Highway near Svenson	In NE. ¼ of SW. ¼ of Sec. 24, T. 8 N., R. 8 W., W. M.	Svenson-Knappa Union High School District No. 2	Purchase	1.00

Clatsop	Right of Way	....	Roosevelt Coast Highway near Warrenton	In Blocks 33 and 34 of Astoria Marine Iron Works Plat	John Saarheim and wife	Purchase	825.00
Columbia	Right of Way	....	Columbia River Highway near St. Helens	In Secs. 4 and 5, T. 4 N., R. 1 W., W. M.	A. J. Kelley and wife	Purchase	3,000.00
Columbia	Right of Way	....	Columbia River Highway at St. Helens	In Tract 2 of Highway Addition	Florence Patton	Purchase	50.00
Columbia	Right of Way	....	Columbia River Highway at St. Helens	In Tract 1 of Highway Addition	R. G. Edwards	Purchase	60.00
Columbia	Right of Way	....	Columbia River Highway at Houlton	In Sec. 4, T. 4 N., R. 1 W., W. M.	Mrs. Cora Larabee	Purchase	403.20
Columbia	Right of Way	....	Columbia River Highway at Houlton	In Sec. 4, T. 4 N., R. 1 W., W. M.	O. D. Kyle and wife	Purchase	460.00
Columbia	Right of Way	....	Columbia River Highway at Houlton	In Sec. 4, T. 4 N., R. 1 W., W. M.	Emmett F. Williams and wife	Purchase	13,750.00
Columbia	Right of Way	0.009	Columbia River Highway at Houlton	In Sec. 4, T. 4 N., R. 1 W., W. M.	Mrs. Anna F. Baseel	Purchase	822.48
Columbia	Right of Way	0.11	Columbia River Highway at Houlton	In Tract 18 of Mountain View Acres in NE. ¼ of NW. ¼ of Sec. 17, T. 4 N., R. 1 W., W. M.	Theodore Berg and wife	Purchase	934.00
Coos	Right of Way	0.76	Roosevelt Coast Highway at Haynes Slough	In N. ½ of N. ½ of Sec. 25, T. 24 S., R. 13 W., W. M.	Robert N. Boughton and wife and Howard C. Whitesel and wife	Purchase	10.00
Coos	Right of Way	0.22	Roosevelt Coast Highway near Coquille	In Block 2 of Burns Acres Addition	B. H. Burns and wife	Purchase	150.00
Coos	Right of Way	2.17	Roosevelt Coast Highway at Haynes Slough	In Secs. 24 and 25, T. 24 S., R. 13 W., W. M.	James R. Robertson and wife	Purchase	250.00
Coos	Right of Way	0.20	Roosevelt Coast Highway near Coquille	In N. ½ of S. ½ of Sec. 36, T. 27 S., R. 13 W., W. M.	Joe A. Scolari and wife and J. C. Watson and wife	Purchase	70.00
Coos	Right of Way	0.30	Roosevelt Coast Highway at Coquille	In Blocks 1 and 2 of Burns Acres Addition	B. H. Burns and wife	Purchase	325.00
Coos	Right of Way	0.35	Roosevelt Coast Highway near Lampa Creek	In NW. ¼ of NE. ¼ of Sec. 36, T. 28 S., R. 14 W., W. M.	Conrad M. Borgard and wife	Purchase	80.00
Coos	Right of Way	0.24	Roosevelt Coast Highway at North Bend	Ferry approach in North Bend	City of North Bend	Purchase	....
Coos	Right of Way	2.20	Roosevelt Coast Highway at North Bend	Ferry approach in North Bend	C. S. Winsor and wife	Purchase	500.00
Coos	Right of Way	0.82	Roosevelt Coast Highway at North Bend	In E. ½ of NW. ¼ of Sec. 25, T. 24 S., R. 13 W., W. M.	Howard C. Whitesel and wife	Purchase	50.00
Coos	Right of Way	5.77	Roosevelt Coast Highway at Russell Point and Larson Slough	In Sec. 2, T. 25 S., R. 13 W., W. M., and in Sec. 25, T. 24 S., R. 13 W., W. M.	Loritan Investment Co.	Purchase	2,500.00

TABLE No. 43—Continued

County	Purpose for Which Acquired	Area in Acres	Approximate Location	Legal Description	From Whom Acquired	How Acquired	Consid-eration
Coos	Right of Way	1.53	Roosevelt Coast Highway at Russell Point	In Secs. 2 and 3, T. 25 S., R. 13 W., W. M.	Loritan Investment Co. and S. P. Ry Co.	Quitclaim and easement	$ ....
Coos	Right of Way for Channel Change	0.20	Roosevelt Coast Highway 8 miles south of Bandon	In NE. ¼ of SE. ¼ of Sec. 1, T. 30 S., R. 15 W., W. M.	H. P. Claussen and wife, Bandon	Purchase	175.00
Curry	Right of Way	0.39	Roosevelt Coast Highway between Denmark and Port Orford	In W. ½ of NW. ¼ of Sec. 21, T. 32 S., R. 15 W., W. M.	David McKenzie and wife, Port Orford	Purchase	30.00
Curry	Right of Way	0.60	Roosevelt Coast Highway between Denmark and Port Orford	In SE. ¼ of SW. ¼ of Sec. 16, T. 32 S., R. 15 W., W. M.	David McKenzie and wife, Port Orford	Purchase	30.00
Curry	Right of Way	2.21	Roosevelt Coast Highway between Denmark and Port Orford	In S. ½ of NW. ¼ of Sec. 27, T. 31 S., R. 15 W., W. M.	Geo. W. Sydnam and wife, Langlois	Purchase	100.00
Curry	Right of Way	0.15	Roosevelt Coast Highway between Denmark and Port Orford	In SW. ¼ of SE. ¼ of Sec. 4, T. 32 S., R. 15 W., W. M.	Zumwalt Bros., Sixes	Purchase	35.00
Curry	Right of Way	1.69	Roosevelt Coast Highway between Denmark and Port Orford	In E. ½ of SW. ¼ of Sec. 16 and NW. ¼ of Sec. 21, T. 32 S., R. 15 W., W. M.	W. J. Sweet and wife, Bandon	Purchase	75.00
Curry	Right of Way	0.04	Roosevelt Coast Highway between Denmark and Port Orford	In SE. ¼ of NW. ¼ of Sec. 22, T. 31 S., R. 15 W., W. M.	N. Swanson and wife, Langlois	Purchase	40.00
Curry	Right of Way	0.12	Roosevelt Coast Highway between Denmark and Port Orford	In NW. ¼ of SW. ¼ of Sec. 27, T. 31 S., R. 15 W., W. M.	Ida Shakelford, St. Helens	Purchase	100.00
Curry	Right of Way	0.12	Roosevelt Coast Highway in Port Orford	Part of Block 45 of Port Orford townsite	John R. Miller et al., Gladstone	Purchase	462.00
Curry	Right of Way	0.52	Roosevelt Coast Highway at Sixes R. Br.	In NW. ¼ of SE. ¼ of Sec. 9, T. 32 S., R. 15 W., W. M.	Floyd L. Randall and wife	Purchase	25.00
Curry	Right of Way	0.17	Roosevelt Coast Highway between Denmark and Port Orford	In NE. ¼ of NW. ¼ of Sec. 22, T. 31 S., R. 15 W., W. M.	Miss Linnie Lockwood	Purchase	1.00
Curry	Right of Way	0.016	Roosevelt Coast Highway in Port Orford	Part of Block 53 of Port Orford townsite	L. B. Hatton, Port Orford	Purchase	50.00
Curry	Right of Way	0.01	Roosevelt Coast Highway in Port Orford	Part of Block 46 of Port Orford townsite	F. Scofield and wife, Myrtle Point	Purchase	100.00
Curry	Right of Way	0.10	Roosevelt Coast Highway in Port Orford	Part of Block 46 of Port Orford townsite	John Masterson and wife	Purchase	1,500.00

Douglas	Right of Way	0.39	Pacific Highway in town of Myrtle Creek	In NW. ¼ of Sec. 28, T. 28 S., R. 5 W., W. M.	Citizens State Bank and John A. Jackson	Purchase	2,500.00
Douglas	Right of Way	1.16	Pacific Highway near Canyonville	In NW. ¼ of NW. ¼ of Sec. 2, T. 31 S., R. 5 W., W. M.	C. E. Chapman and wife	Purchase	300.00
Jackson	Right of Way	1.27	Green Springs Highway 5 miles west of Pinehurst	In W. ½ of E. ½ of Sec. 3, T. 40 S., R. 3 E., W. M.	Geo. B. Crapsey et al.	Purchase	500.00
Jackson	Right of Way	0.35	Green Springs Highway between Keene Creek and Jenny Creek	In NE. ¼ of NW. ¼ of Sec. 4, T. 40 S., R. 3 E., W. M.	James Vincent Graves and wife	Purchase	30.00
Jackson	Right of Way	2.78	Green Springs Highway between Keene Creek and Jenny Creek	In S. ½ of NW. ¼ of Sec. 3, T. 40 S., R. 3 E., W. M.	Jacob P. Timmerman and wife	Purchase	80.79
Jackson	Right of Way	0.68	Pacific Highway at Foster Creek	In Sec. 26, T. 36 S., R. 4 W., W. M.	William P. Bolduc and wife	Acquired by Jackson County	575.00
Jackson	Right of Way	0.024	Pacific Highway in Central Point	In Lot 11 of Block 1 of Grand View Addition	City of Central Point	Acquired by Jackson County	1.00
Jackson	Right of Way	0.97	Pacific Highway between Tolo and Central Point	In NE. ¼ of Sec. 33, T. 36 S., R. 2 W., W. M.	Clyde Hansen and wife	Acquired by Jackson County	575.00
Jackson	Right of Way	11.30	Green Springs Highway between Keene Creek and Jenny Creek	In Secs. 2, 3, 11 and 12, T. 40 S., R. 3 E., W. M.	Henry Lumber Co.	Purchase	583.74
Jackson	Right of Way	....	Pacific Highway in Central Point	In Lot 15 of Grand View Addition	J. G. Love and wife, Central Point	Purchase	25.00
Jackson	Right of Way	....	Pacific Highway in Central Point	Lots 16 and 17 of Block 1, Grand View Addition	James G. Love and wife, Central Point	Acquired by Jackson County	450.00
Jackson	Right of Way	4.76	Green Springs Highway between Keene Creek and Jenny Creek	In S. ½ of SW. ¼ of Sec. 2, T. 40 S., R. 3 E., W. M.	Stark-Levis Land Co.	Purchase	237.60
Jackson	Right of Way	....	Pacific Highway in Central Point	Lots 18, 19, 20 and 21 of Block 1, Grand View Addition	Blanche Maule West et al.	Acquired by Jackson County	500.00
Jackson	Right of Way	....	Pacific Highway in Central Point	Lots 12 and 13 of Block 1, Grand View Addition	Elmer T. Weiser	Acquired by Jackson County	200.00
Jackson	Right of Way	0.65	Crater Lake Highway between prospect and Bridge	In Secs. 29 and 32, T. 32 S., R. 3 E., W. M.	Frances I. Pearson, Prospect	Purchase	100.00
Jefferson	Right of Way	0.17	The Dalles-California Highway at Maupin	In SE. ¼ of SE. ¼ of Sec. 32, T. 4 S., R. 14 E., W. M.	Oregon Trunk Railway Co.	Perpetual Easement	1.00
Jefferson	Right of Way	0.11	The Dalles-California Highway at Wasco County Line	In Lot 3 of Sec. 3, T. 9 S., R. 15 E., W. M.	John E. Conway and wife, Madras	Purchase	50.00
Jefferson	Right of Way	....	The Dalles-California Highway between the Wasco County Line and Madras	In NE. ¼ of Sec. 5, T. 10 S., R. 14 E., W. M.	George E. Laughlin	Acquired by Jefferson County	....

TABLE No. 43—Continued

County	Purpose for Which Acquired	Area in Acres	Approximate Location	Legal Description	From Whom Acquired	How Acquired	Consideration
Josephine	Right of Way	0.005	Pacific Highway at Grants Pass	Detour during bridge construction	Wilford Allen, Grants Pass	2-year lease expires 1932	$ 150.00
Josephine	Right of Way	0.44	Pacific Highway at Green Creek Revision	In Lot 10 of Sec. 23, T. 36 S., R. 5 W., W. M.	D. O. Frederick and wife	Purchase	300.00
Klamath	Right of Way	0.014	Green Springs Highway at Keno	Detour during bridge construction	Douglas J. Puckett, Keno	1-year lease expires May 12, 1931	400.00
Klamath	Right of Way	0.26	The Dalles-California Highway south Klamath Falls	In E. ½ of W. ½ of Sec. 3, T. 39 S., R. 9 E., W. M.	Swan Lake Moulding Co.	Purchase	1,000.00
Lake	Roadway to Quarry Site	....	Fremont Highway Lakeview-California Line section	In S. ½ of S. ½ of Sec. 36, T. 40 S., R. 20 E., W. M.	F. J. Sherrard and wife	Purchase	Included in quarry site
Lane	Right of Way	1.13	Willamette Highway near Pleasant Hill	In Secs. 28 and 33, T. 18 S., R. 2 W., W. M., and Secs. 1 and 2, T. 19 S., R. 2. W., W. M.	C. F. Hyde, Eugene	Purchase	301.33
Lane	Right of Way	1.23	McKenzie Highway on McKenzie Bridge section	In NE. ¼ of SE. ¼ of Sec. 14, T. 16 S., R. 5 E., W. M.	Harry G. Hayes and wife	Purchase	1,800.00
Lane	Right of Way	0.48	McKenzie Highway on McKenzie Bridge section	In Secs. 13 and 14, T. 16 S., R. 5 E., W. M.	Geo. T. Hall and wife, Eugene	Purchase	500.00
Lane	Right of Way	0.481	McKenzie Highway on McKenzie Bridge section	In NW. ¼ of SW. ¼ of Sec. 13, T. 16 S., R. 5 E., W. M.	Albert L. Wachsmuth and wife	Purchase	500.00
Lane	Right of Way	1.683	McKenzie Highway on McKenzie Bridge section	In NW. ¼ of SE. ¼ of Sec. 14, T. 16 S., R. 5 E., W. M.	Smith L. Taylor and wife, Eugene	Purchase	400.00
Lane	Right of Way	1.591	McKenzie Highway on McKenzie Bridge section	In SE. ¼ of Sec. 14, T. 16 S., R. 5 E., W. M.	Smith L. Taylor and wife, Eugene	Purchase	400.00
Lane	Right of Way	0.019	McKenzie Highway on McKenzie Bridge section	In NW. ¼ of SW. ¼ of Sec. 13, T. 16 S., R. 5 E., W. M.	Katherine Alice Quigg	Purchase	20.00
Lane	Right of Way	0.275	McKenzie Highway on McKenzie Bridge section	In NW. ¼ of SW. ¼ of Sec. 13, T. 16 S., R. 5 E., W. M.	Geo. H. Moody and wife	Purchase	450.00
Lane	Right of Way	0.023	McKenzie Highway on McKenzie Bridge section	In NW. ¼ of SW. ¼ of Sec. 13, T. 16 S., R. 5 E., W. M.	Myrna B. Freman	Purchase	50.00

Lane	Right of Way	0.049	McKenzie Highway on McKenzie Bridge section	In NW. ¼ of SW. ¼ of Sec. 13, T. 16 S., R. 5 E., W. M.	Edith V. Day	Purchase	125.00
Lane	Right of Way	0.144	McKenzie Highway on McKenzie Bridge section	In NE. ¼ of SE. ¼ of Sec. 14, T. 16 S., R. 5 E., W. M.	Katherine Douglas and Fred Rhodes	Purchase	75.00
Lane	Right of Way	0.057	McKenzie Highway on McKenzie Bridge section	In NW. ¼ of SW. ¼ of Sec. 13, T. 16 S., R. 5 E., W. M.	Alta M. Bogart, Eugene	Purchase	75.00
Lane	Right of Way	0.043	McKenzie Highway on McKenzie Bridge section	In NW. ¼ of SW. ¼ of Sec. 13, T. 16 S., R. 5 E., W. M.	Alice M. Croner	Purchase	37.50
Lane	Right of Way	0.43	McKenzie Highway on Springfield-Cogswell Hill section	In E. ½ of E. ½ of Sec. 36, T. 17 S., R. 2. W., W. M.	Charles Willett Ruth and wife	Purchase	43.00
Lane	Right of Way	2.63	McKenzie Highway on Springfield-Cogswell Hill section	In Sec. 36, T. 17 S., R. 2 W., W. M.	A. E. Meinig, Springfield	Purchase	263.00
Lane	Right of Way	0.429	McKenzie Highway near Cogswell Hill	In SE. ¼ of NE. ¼ of Sec. 31, T. 17 S., R. 1 W., W. M.	Joseph L. Hart	Acquired by Lane County	100.00
Lane	Right of Way	0.464	McKenzie Highway near Cogswell Hill	In SE. ¼ of NE. ¼ of Sec. 31, T. 17 S., R. 1 W., W. M.	John B. Endicott	Acquired by Lane County	88.00
Lane	Right of Way	2.237	McKenzie Highway near Cogswell Hill	In SW. ¼ of NE. ¼ of Sec. 31, T. 17 S., R. 1 W., W. M.	John S. and Harvey M. Couley	Acquired by Lane County	425.00
Lane	Right of Way	0.07	McKenzie Highway on Nimrod-Belknap Springs section	In E. ½ of SE. ¼ of Sec. 22, T. 16 S., R. 4 E., W. M.	T. A. Gilbert and wife	Purchase	50.00
Lane	Right of Way	0.43	McKenzie Highway on Nimrod-Belknap Springs section	In Lot 4 of Sec. 23, T. 16 S., R. 4 E., W. M.	Bert Vincent and wife	Purchase	850.00
Lane	Right of Way	1.30	McKenzie Highway on Hendricks Bridge-Doyle Hill section	In NE. ¼ of SW. ¼ of Sec. 28, T. 17 S., R. 1 W. W. M.	Mary E. Smeed	Purchase	472.45
Lane	Right of Way	4.30	McKenzie Highway on Hendricks Bridge-Doyle Hill section	In SW. ¼ and NE. ¼ of Sec. 28, T. 17 S., R. 1 W., W. M.	Mary E. Smeed	Purchase	2,015.75
Lane	Right of Way	0.90	McKenzie Highway on Hendricks Bridge-Doyle Hill section	In NE. ¼ of Sec. 28, T. 17 S., R. 1 W., W. M.	A. L. Vaughn and wife	Purchase	406.95
Lane	Right of Way	1.48	McKenzie Highway Hendricks Bridge-Doyle Hill section	In NW. ¼ of Sec. 28, T. 17 S., R. 1 W. W. M.	Oscar Millican	Purchase	553.00

TABLE No. 43—Continued

County	Purpose for Which Acquired	Area in Acres	Approximate Location	Legal Description	From Whom Acquired	How Acquired	Consid- eration
Lane	Right of Way	1.16	McKenzie Highway Hendricks Bridge-Doyle Hill section	In SE. ¼ of Sec. 29, T. 17 S., R. 1 W., W. M.	Jesse Easton and wife	Purchase	$ 500.00
Lane	Right of Way	1.15	McKenzie Highway Hendricks Bridge-Doyle Hill section	In SW. ¼ of NE. ¼ of Sec. 28, T. 17 S., R. 1 W., W. M.	C. I. Anderson and wife	Purchase	758.75
Lane	Right of Way	0.43	McKenzie Highway Nimrod-Belknap Springs section	In NW. ¼ of Sec. 19, T. 16 S., R. 5 E., W. M.	Constantine Morton et al.	Gift	....
Lane	Right of Way	0.78	McKenzie Highway Nimrod-Belknap Springs section	In Lot 3 of Sec. 27 and Lot 1 of Sec. 28, T. 16 S., R. 4 E., W. M.	E. H. McAllister et al.	Purchase	78.00
Lane	Right of Way	0.12	McKenzie Highway Nimrod-Belknap Springs section	In Lot 2 of Sec. 27, T. 16 S., R. 4 E., W. M.	Samuel Scott and wife	Purchase	200.00
Lane	Right of Way	0.23	McKenzie Highway Nimrod-Belknap Springs section	In SW. ¼ of SW. ¼ of Sec. 10, T. 16 S., R. 6 E., W. M.	Edward H. Weston and wife	Purchase	10.00
Lane	Right of Way for Dam	....	McKenzie Highway at Cogswell Mill Race Slough	In Secs. 25, 26, 35 and 36, T. 17 S., R 2 W., and in Secs. 30 and 31, T. 17 S., R. 1 W., W. M.	Martha Bristow et al.	Agreement	538.00
Lincoln	Right of Way	....	Roosevelt Coast Highway south of Waldport	In T. 13 S., R. 11 W., W. M., and T. 13 and 14 S., R. 12 W., W. M.	U. S. Spruce Production Corp.	Exchange of lands	....
Lincoln	Right of Way	....	Roosevelt Coast Highway Beaver Creek-Alsea Bay section	In NW. ¼ of Sec. 6 and W. ½ of Sec. 18, T. 12 S., R. 11 W., W. M.	U. S. Spruce Production Corp.	Acquired by Lincoln County	....
Linn	Right of Way	1.32	Pacific Highway south of Albany	In SW. ¼ of Sec. 30, T. 12 S., R. 3 W., W. M.	H. W. Torbet and Forrest Davis	Purchase	175.00
Linn	Right of Way	2.06	Pacific Highway south of Albany	In NW. ¼ of Sec. 30, T. 12 S., R. 3 W., W. M.	Mrs. R. H. Gouley	Purchase	206.00
Malheur	Right of Way	1.03	Old Oregon Trail near Ontario	In E. ½ of Sec. 31, T. 15 S., R. 47 E., W. M.	Lombard Horsley Investment Co.	Purchase	100.00
Malheur	Right of Way	3.92	Old Oregon Trail near Weiser-Ontario section	In Sec. 4, T. 16 S., R. 47 E., and Secs. 31 and 32, T. 15 S., R. 47 E., W. M.	Republic Investment Co.	Purchase	156.80
Malheur	Right of Way	1.76	Old Oregon Trail near Weiser-Ontario	In Sec. 16, T. 17 S., R. 47 E., W. M.	W. B. Hall and wife	Purchase	88.00
Malheur	Right of Way	0.25	Old Oregon Trail, Dead Ox Flat section	In SW. ¼ of SW. ¼ of Sec. 23, T. 16 S., R. 47 E., W. M.	Wm. F. Vincent	Purchase	25.00

Malheur	Right of Way	0.16	Old Oregon Trail, Dead Ox Flat section	In SW. ¼ of SW. ¼ of Sec. 33, T. 15 S., R. 47 E., W. M.	O. E. Vick and wife, Weiser, Ida.	Purchase	50.00
Malheur	Right of Way	0.27	Old Oregon Trail, Dead Ox Flat section	In SW. ¼ of SW. ¼ of Sec. 33, T. 15 S., R. 47 E., W. M.	O. E. Vick and wife, Weiser, Ida.	Purchase	27.00
Malheur	Right of Way	0.60	Old Oregon Trail, Dead Ox Flat section	In NW. ¼ of Sec. 9, T. 16 S., R. 47 E., W. M.	Jane E. Turner and husband, Weiser, Ida.	Purchase	1.00
Malheur	Right of Way	0.15	Old Oregon Trail, Dead Ox Flat section	In NE. ¼ of NE. ¼ of Sec. 32, T. 15 S., R. 47 E., W. M.	C. H. Taylor and wife, Weiser, Ida.	Purchase	50.00
Malheur	Right of Way	0.51	Old Oregon Trail, Dead Ox Flat section	In NE. ¼ of NE. ¼ of Sec. 5, T. 16 S., R. 47 E., W. M.	James W. Turner	Purchase	100.00
Malheur	Right of Way	0.30	Old Oregon Trail, Dead Ox Flat section	In NE. ¼ of SW. ¼ of Sec. 4, T. 16 S., R. 47 E., W. M.	John W. Stonemen	Purchase	60.00
Malheur	Right of Way	0.66	Old Oregon Trail, Dead Ox Flat section	In NE. ¼ of Sec. 16, T. 16 S., R. 47 E., W. M.	Snake River Dist. Imp. Co.	Purchase	75.00
Malheur	Right of Way	0.15	Old Oregon Trail, Dead Ox Flat section	In SE. ¼ of NE. ¼ of Sec. 22, T. 16 S., R. 47 E., W. M.	Wm. H. Sumner and wife	Purchase	72.50
Malheur	Right of Way	0.15	Old Oregon Trail, Dead Ox Flat section	In SE. ¼ of SE. ¼ of Sec. 29, T. 15 S., R. 47 E., W. M.	Miss Emma C. Peterson	Purchase	30.00
Malheur	Right of Way	0.74	Old Oregon Trail, Dead Ox Flat section	In W. ½ of SE. ¼ of Sec. 15, T. 16 S., R. 47 E., W. M.	Payette-Oregon Slope Irr. Dist.	Purchase	111.00
Malheur	Right of Way	0.30	Old Oregon Trail, Dead Ox Flat section	In NW. ¼ of SW. ¼ of Sec. 23; T. 16 S., R. 47 E., W. M.	Payette-Oregon Slope Irr. Dist.	Purchase	45.00
Malheur	Right of Way	0.04	Old Oregon Trail, Weiser-Ontario section	In SW. ¼ of SW. ¼ of Sec. 23, T. 16 S., R. 47 E., W. M.	Oregon Slope Grange	Purchase	22.00
Malheur	Right of Way	0.69	Old Oregon Trail, Dead Ox Flat section	In SE. ¼ of SE. ¼ of Sec. 15, T. 16 S., R. 47 E., W. M.	Malheur County	Purchase	34.50
Malheur	Right of Way	0.71	Old Oregon Trail, Dead Ox Flat section	In NE. ¼ of SW. ¼ of Sec. 15, T. 16 S., R. 47 E., W. M.	Malheur County	Purchase	71.00
Malheur	Right of Way	0.73	Old Oregon Trail, Dead Ox Flat section	In SW. ¼ of NW. ¼ of Sec. 15, T. 16 S., R. 47 E. W. M.	Malheur County	Purchase	73.00
Malheur	Right of Way	0.21	Old Oregon Trail, Dead Ox Flat section	In SE. ¼ of SE. ¼ of Sec. 22, T. 16 S., R. 47 E., W. M.	John A. McMillan and wife	Purchase	31.50
Malheur	Right of Way	0.64	Old Oregon Trail, Dead Ox Flat section	In SE. ¼ of NW. ¼ of Sec. 31, T. 15 S., R. 47 E., W. M.	Malheur County	Gift	....
Malheur	Right of Way	0.24	Old Oregon Trail, Dead Ox Flat section	In W. ½ of W. ½ of Sec. 33, T. 15 S., R. 47 E., W. M.	Malheur County	Gift	....
Malheur	Right of Way	0.30	Old Oregon Trail, Dead Ox Flat section	In NE. ¼ of SE. ¼ of Sec. 32, T. 15 S., R. 47 E., W. M.	Malheur County	Gift	....
Malheur	Right of Way	0.19	Old Oregon Trail, Dead Ox Flat section	In N. ½ of SE. ¼ of Sec. 32, T. 15 S., R. 47 E., W. M.	Malheur County	Gift	....
Malheur	Right of Way	1.39	Old Oregon Trail, Dead Ox Flat section	In NE. ¼ of Sec. 36, T. 15 S., R. 46 E., W. M.	Malheur County	Gift	....

TABLE No. 43—Continued

County	Purpose for Which Acquired	Area in Acres	Approximate Location	Legal Description	From Whom Acquired	How Acquired	Consid-eration
Malheur	Right of Way	0.09	Old Oregon Trail, Dead Ox Flat section	In SW. ¼ of SW. ¼ of Sec. 33, T. 15 S., R. 47 E., W. M.	Local Progress Club of Snake River	Purchase	30.00
Malheur	Right of Way	0.15	Old Oregon Trail, Dead Ox Flat section	In SE. ¼ of NE. ¼ of Sec. 22, T. 16 S., R. 47 E., W. M.	C. M. Johnson and wife	Purchase	22.50
Malheur	Right of Way	0.08	Old Oregon Trail, Dead Ox Flat section	In NE. ¼ of NE. ¼ of Sec. 32, T. 15 S., R. 47 E., W. M.	C. P. Hudson and wife	Purchase	25.00
Malheur	Right of Way	0.30	Old Oregon Trail, Dead Ox Flat section	In SE. ¼ of NE. ¼ of Sec. 5, T. 16 S., R. 47 E., W. M.	Frank Hopper and wife	Purchase	50.00
Malheur	Right of Way	0.60	Old Oregon Trail, Dead Ox Flat section	In NE. ¼ of Sec. 8, T. 16 S., R. 47 E., W. M.	Frank Gribben and wife	Purchase	60.00
Malheur	Right of Way	....	Central Oregon Highway across Little Valley Unit of Vale Project	In Secs. 29 and 30, T. 19 S., R. 43 E., and Sec. 36, T. 19 S., R. 42 E., W. M.	U. S. Bureau of Reclamation	License	....
Malheur	Right of Way	0.30	Old Oregon Trail, Dead Ox Flat section	In NE. ¼ of SE. ¼ of Sec. 22, T. 16 S., R. 47 E., W. M.	L. R. Breithaupt and wife	Purchase	95.00
Malheur	Right of Way	1.21	Old Oregon Trail, Weiser-Ontario section	In SW. ¼ of SW. ¼ of Sec. 4, T. 16 S., R. 47 E. W. M.	Oma Peacock and husband	Purchase	1.00
Malheur	Right of Way	0.54	Old Oregon Trail, Dead Ox Flat section	In SW. ¼ of NW. ¼ of Sec. 33, T. 15 S., R. 47 E., W. M.	Myron A. Patch, Weiser, Ida.	Purchase	14.00
Malheur	Right of Way	0.60	Old Oregon Trail, Dead Ox Flat section	In SE. ¼ of SE. ¼ of Sec. 29, T. 15 S., R. 47 E., W. M.	Jennie Patch, Weiser, Ida.	Purchase	50.00
Malheur	Right of Way	0.30	Old Oregon Trail, Dead Ox Flat section	In NE. ¼ of NE. ¼ of Sec. 32, T. 15, S., R. 47 E., W. M.	Jennie Patch, Weiser, Ida.	Purchase	25.00
Malheur	Right of Way	0.15	Old Oregon Trail, Dead Ox Flat section	In NE. ¼ of SE. ¼ of Sec. 8, T. 16 S., R. 47 E., W. M.	B. C. Blakesley and wife	Purchase	50.00
Malheur	Right of Way	1.51	Old Oregon Trail, Snake River Slides-Ontario section	In Secs. 9, 10 and 16 of T. 17 S., R. 47 E., W. M.	Bernard Eastman and wife	Purchase	61.45
Malheur	Right of Way	0.30	Old Oregon Trail, Dead Ox Flat section	In NW. ¼ of SW. ¼ of Sec. 28, T. 15 S., R. 47 E., W. M.	Roy Gibson and wife	Purchase	200.00
Malheur	Right of Way	0.01	Old Oregon Trail, Weiser-Spur section	In Lots 17 and 18, Block 10, town of Annex	Prudence S. Johnson	Purchase	10.00
Malheur	Right of Way	0.08	Old Oregon Trail, Weiser-Spur section	In NE. ¼ of SE. ¼ of Sec. 29, T. 15 S., R. 47 E., W. M.	Engle Johnson and wife	Purchase	12.00
Malheur	Right of Way	0.52	Old Oregon Trail, Dead Ox Flat section	In SW. ¼ of Sec. 9, T. 16 S., R. 47 E., W. M.	Sadie D. Joseph	Purchase	178.00

Malheur	Right of Way	0.35	Old Oregon Trail, Dead Ox Flat section	In SE. ¼ of SW. ¼ of Sec. 9, T. 16 S., R. 47 E., W. M.	T. P. Joseph and wife	Purchase	150.00
Malheur	Right of Way	0.60	Old Oregon Trail, Dead Ox Flat section	In NW. ¼ of NW. ¼ of Sec. 33, T. 15 S., R. 47 E., W. M.	Edwin J. Patch and wife	Purchase	22.50
Malheur	Right of Way	0.60	Old Oregon Trail, Dead Ox Flat section	In NW. ¼ of NW. ¼ of Sec. 33, T. 15 S., R. 47 E., W. M.	Edwin J. Patch and wife	Purchase	22.50
Malheur	Right of Way	1.20	Old Oregon Trail, Dead Ox Flat section	In SW. ¼ of SW. ¼ of Sec. 28, T. 15 S., R. 47 E., W. M.	Edwin J. Patch and wife	Purchase	72.50
Malheur	Right of Way	0.03	Old Oregon Trail, Dead Ox Flat section	In SE. ¼ of NW. ¼ of Sec. 15, T. 16 S., R. 47 E., W. M.	Payette-Oregon Slope Irr. Dist.	Purchase	1.00
Malheur	Right of Way	0.30	Old Oregon Trail, Dead Ox Flat section	In SW. ¼ of NW. ¼ of Sec. 4, T. 16 S., R. 47 E., W. M.	Charles F. Smith and wife	Purchase	1.00
Multnomah	Interstate Bridge	....	Pacific Highway between Portland and Vancouver	Bridge across Columbia River	Multnomah County	Deed	....
Polk	Right of Way	0.02	McMinnville-Tillamook Highway at Valley Junction	In SW. ¼ of Sec. 8, T. 6 S., R. 7 W., W. M.	School District No. 69	Purchase	1.00
Polk	Right of Way	1.21	McMinnville-Tillamook Highway at Valley Junction	In S. ½ of Sec. 8, T. 6 S., R. 7 W., W. M.	Walter W. Werth and wife	Purchase	250.00
Polk	Right of Way	0.136	Monmouth-Independence Highway	In Secs. 29 and 30, T. 8 S., R. 4 W., W. M.	S. R. Skeels and wife	Purchase	34.00
Polk	Right of Way	0.033	Monmouth-Independence Highway	In Sec. 29, T. 8 S., R. 4 W., W. M.	Frank Parker and wife	Purchase	9.25
Polk	Right of Way	0.007	Monmouth-Independence Highway	In Sec. 29, T. 8 S., R. 4 W., W. M.	F. O. Parker and wife	Purchase	3.00
Polk	Right of Way	2.25	West Side Highway near Clow's Corner	In E. ½ of Sec. 13, T. 8 S., R. 5 W., W. M.	J. H. Mulkey and wife	Purchase	225.00
Polk	Right of Way	0.103	Monmouth-Independence Highway	In Sec. 29, T. 8 S., R. 4 W., W. M.	Henry W. Mattison and wife	Purchase	30.90
Polk	Right of Way	0.01	Monmouth-Independence Highway	In Sec. 29, T. 8 S., R. 4 W., W. M.	Morse Monzingo and wife	Purchase	3.50
Polk	Right of Way	0.97	West Side Highway near Clow's Corner	In Sec. 12, T. 8 S., R. 5 W., and Sec. 7, T. 8 S., R. 4 W., W. M.	John Clow et al.	Purchase	150.00
Polk	Right of Way	0.29	West Side Highway near Clow's Corner	In E. ½ of Sec. 13, T. 8 S., R. 5 W., W. M.	E. L. Comstock and wife	Purchase	90.00
Polk	Right of Way	2.15	West Side Highway near Clow's Corner	In Secs. 12 and 13, T. 8 S., R. 5 W., W. M.	William E. Collins	Purchase	215.00
Polk	Right of Way	0.008	Monmouth-Independence Highway	In Sec. 29, T. 8 S., R. 4 W., W. M.	H. C. Compton	Purchase	3.00
Polk	Right of Way	0.23	Monmouth-Independence Highway	In NE. ¼ of Sec. 30, T. 8 S., R. 4 W., W. M.	O. P. Calef and wife	Purchase	57.50

TABLE No. 43—Continued

County	Purpose for Which Acquired	Area in Acres	Approximate Location	Legal Description	From Whom Acquired	How Acquired	Consideration
Polk	Right of Way	3.08	West Side Highway at Holmes Gap	In Sec. 32, T. 6 S., R. 4 W., W. M.	George Chandler	Purchase	$ 261.80
Polk	Right of Way	0.14	West Side Highway near Clow's Corner	In NE. ¼ of NE. ¼ of Sec. 12, T. 8 S., R. 5 W., W. M.	B. F. Butler and wife	Purchase	25.00
Polk	Right of Way	0.036	Monmouth-Independence Highway	In Sec. 30, T. 8 S., R. 4 W., W. M.	N. G. Bennett and wife	Purchase	10.00
Polk	Right of Way	0.067	Monmouth-Independence Highway	In Sec. 29, T. 8 S., R. 4 W., W. M.	W. N. Putnam and wife	Purchase	33.50
Polk	Right of Way	0.47	West Side Highway near Clow's Corner	In Sec. 12, T. 8 S., R. 5 W., W. M.	H. C. Hiebert and wife	Purchase	60.00
Polk	Right of Way	0.13	West Side Highway near Clow's Corner	In E. ½ of Sec. 13, T. 8 S., R. 5 W., W. M.	Esther Houk and husband	Purchase	40.00
Polk	Right of Way	0.28	West Side Highway near Clow's Corner	In E. ½ of Sec. 24, T. 8 S., R. 5 W., W. M.	First National Bank of Monmouth	Purchase	75.00
Polk	Right of Way	0.54	West Side Highway near Monmouth	In Lot 10, College View Addition	R. L. Fishback and wife	Purchase	20.00
Polk	Right of Way	0.05	West Side Highway near Clow's Corner	In SE. ¼ of Sec. 24, T. 8 S., R. 5 W., W. M.	B. B. Friesen and wife	Purchase	10.00
Polk	Right of Way	0.33	West Side Highway near Clow's Corner	In SE. ¼ of Sec. 24, T. 8 S., R. 5 W., W. M.	J. Peter Ingermonson and wife	Purchase	60.00
Polk	Right of Way	0.29	West Side Highway near Clow's Corner	In NE. ¼ of Sec. 24, T. 8 S., R. 5 W., W. M.	James Riddell and wife	Purchase	45.00
Polk	Right of Way	0.34	West Side Highway near Clow's Corner	In Sec. 12, T. 8 S., R. 5 W., W. M.	E. L. Riney and wife	Purchase	51.00
Polk	Right of Way	0.70	West Side Highway near Clow's Corner	In Sec. 12, T. 8 S., R. 5 W., W. M.	John B. Riney and wife	Purchase	105.00
Polk	Right of Way	0.39	West Side Highway near Clow's Corner	In E. ½ of Sec. 24, T. 8 S., R. 5 W., W. M.	D. R. Riddell et al.	Purchase	60.00
Polk	Right of Way	1.34	West Side Highway near Clow's Corner	In Sec. 12, T. 8 S., R. 5 W., W. M.	Emanuel Naslin	Purchase	134.00
Polk	Right of Way	1.17	West Side Highway near Clow's Corner	In Secs. 13 and 14, T. 8 S., R. 5 W., W. M.	C. Lorence and wife	Purchase	175.50
Polk	Right of Way	0.02	West Side Highway near Clow's Corner	In SE. ¼ of Sec. 24, T. 8 S., R. 5 W., W. M.	James W. Gentle and wife	Purchase	10.00
Polk	Right of Way	0.29	West Side Highway near Clow's Corner	In SE. ¼ of Sec. 24, T. 8 S., R. 5 W., W. M.	Carrie M. Gentle and husband	Purchase	45.00

Tillamook	Right of Way	0.21	Roosevelt Coast Highway near Trask River	In SW. ¼ of SE. ¼ of Sec. 31, T. 1 S., R. 9 W., W. M.	Nick M. Nielson and wife	Purchase	1.00
Tillamook	Right of Way	....	Roosevelt Coast Highway at Lake Lytle	Lots 10, 11, 12 in Block 3 of Lake Lytle Subdivision	George Watt and wife	Purchase	1,000.00
Tillamook	Right of Way	0.19	Roosevelt Coast Highway about 1 mile south of Tillamook	In SW. ¼ of SE. ¼ of Sec. 31, T. 1 S., R. 9 W., W. M.	Henry White and wife	Gift	....
Tillamook	Right of Way	....	Roosevelt Coast Highway at Lake Lytle	Part of Blocks 1, 2, 3 and 7 of townsite of Lake Lytle and other land	H. T. Botts and wife	Purchase	1,400.00
Tillamook	Right of Way	1.42	Roosevelt Coast Highway roadway to Jim Creek Quarry	In Secs. 5 and 8 of T. 6 S., R. 10 W., W. M.	Gus Bray and wife	Perpetual easement	375.00
Tillamook	Right of Way	2.27	Roosevelt Coast Highway Neskowin-Otis section	In E. ½ of Sec. 36, T. 5 S., R. 11 W.; SW. ¼ of SW. ¼ of Sec. 31, T. 5 S., R. 10 W.; NE. ¼ of NE. ¼ of Sec. 1, T. 6 S., R. 11 W., and N. ½ of Sec. 6, T. 6 S., R. 10 W., W. M.	Oscar Taggart and wife	Purchase	454.00
Tillamook	Right of Way	1.80	Roosevelt Coast Highway at Fishers Point	In Sec. 4, T. 2 N., R. 10 W., W. M.	S. P. Ry. Co.	Agreement	....
Tillamook	Right of Way	0.22	Roosevelt Coast Highway Neskowin-Otis section	In Secs. 5 and 6, T. 6 S., R. 10 W., W. M.	Fred Affolter and wife	Purchase	100.00
Tillamook	Right of Way	0.088	Roosevelt Coast Highway in Tillamook City	In Lot 1, Block 1, City of Tillamook	Hogden-Brewster Milling Co.	Purchase	7,000.00
Tillamook	Right of Way	0.051	Roosevelt Coast Highway in Tillamook City	In Lot 8, Block 1, City of Tillamook	Charles A. Vogler	Purchase	2,500.00
Umatilla	Right of Way	0.52	Oregon-Washington Highway at Milton	In Secs. 12 and 13, T. 5 N., R. 35 E., W. M.	W. H. Frazier and wife	Purchase	78.00
Umatilla	Right of Way	1.14	Oregon-Washington Highway Milton Hill Section	In Sec. 14, T. 5 N., R. 35 E., W. M.	Rachel C. Bade	Purchase	171.00
Umatilla	Right of Way	2.04	Oregon-Washington Highway near Milton	In NW. ¼ of SW. ¼ of Sec. 13, T. 5 N., R. 35 E., W. M.	E. C. Schrimpf	Purchase	411.40
Umatilla	Right of Way	1.14	Oregon-Washington Highway Milton Hill section	In Sec. 14, T. 5 N., R. 35 E., W. M.	Wm. H. Steen	Purchase	125.40
Union	Right of Way	0.30	Old Oregon Trail between La Grande and Hot Lake	In NW. ¼ of NE. ¼ of Sec. 16, T. 3 S., R. 38 E., W. M.	C. R. Gekeler and wife	Purchase	90.00
Union	Right of Way	1.63	Old Oregon Trail between Kamela and Hilgard	In Secs. 31 and 32, T. 2 S., R. 37 E., W. M.	William W. Gray and wife	Gift	....
Union	Right of Way	0.40	Old Oregon Trail between Kamela and Hilgard	In NW. ¼ of NW. ¼ of Sec. 1, T. 2 S., R. 35 E., W. M.	Franklin Truax and wife	Purchase	15.00

TABLE No. 43—Continued

County	Purpose for Which Acquired	Area in Acres	Approximate Location	Legal Description	From Whom Acquired	How Acquired	Consid-eration
Union	Right of Way	2.01	Old Oregon Trail between Hilgard and La Grande	In SE. ¼ of NW. ¼ of Sec. 32, T. 2 S., R. 37 E., W. M.	Ed Saling and wife	Purchase	$ 200.00
Union	Right of Way	0.64	Old Oregon Trail between La Grande and Hot Lake	In NE. ¼ of NE. ¼ of Sec. 26, T. 3 S., R. 38 E., W. M.	J. M. McCall Estate	Purchase	64.00
Union	Right of Way	6.37	Old Oregon Trail between La Grande and Hot Lake	In Sec. 23, T. 3 S., R. 38 E., W. M.	W. A. McCall and wife	Purchase	477.75
Union	Right of Way	0.02	Old Oregon Trail between La Grande and Hot Lake	In SE. ¼ of NW. ¼ of Sec. 23, T. 3 S., R. 38 E., W. M.	A. Muilenburg and wife	Purchase	15.00
Union	Right of Way	1.67	Old Oregon Trail at Lone Pine	In NE. ¼ of NE. ¼ of Sec. 26, T. 3 S., R. 38 E., W. M.	J. B. Menefee Lumber Co.	Purchase	500.00
Union	Right of Way	3.19	Old Oregon Trail between La Grande and Hot Lake	In N. ½ of SW. ¼ of Sec. 15, T. 3 S., R. 38 E., W. M.	C. B. Robinson and wife	Purchase	478.50
Union	Right of Way	0.46	Old Oregon Trail between La Grande and Hot Lake	In SW. ¼ of NE. ¼ of Sec. 31, T. 3 S., R. 39 E., W. M.	Flossie Engel	Purchase	57.50
Union	Right of Way	0.42	Old Oregon Trail between La Grande and Hot Lake	In E. ½ of NE. ¼ of Sec. 16, T. 3 S., R. 38 E., W. M.	W. J. Hughes and wife	Purchase	209.00
Union	Right of Way	5.65	Old Oregon Trail between La Grande and Hot Lake	In NW. ¼ of Sec. 31, T. 3 S., R. 39 E., W. M.	Lloyd B. Pierce and wife	Purchase	706.25
Union	Right of Way	5.30	Old Oregon Trail between La Grande and Hot Lake	In SE. ¼ of Sec. 31, T. 3 S., R. 39 E., W. M.	Walter M. Pierce and wife	Purchase	662.50
Union	Right of Way	0.22	Old Oregon Trail between La Grande and Hot Lake	In SW. ¼ of NW. ¼ of Sec. 15, T. 3 S., R. 38 E., W. M.	Mrs. I. H. Zundel	Purchase	300.00
Union	Right of Way for Snow Fence	....	Old Oregon Trail between Mile Posts 310.46 and 311.5	In Sec. 29, T. 5 S., R. 40 E., W. M.	W. F. Titus, Union	1-year lease expires Mar. 31, 1931	30.00
Wasco	Right of Way	0.038	The Dalles-California Highway at Jefferson County Line	In SE. ¼ of SW. ¼ of Sec. 34, T. 8 S., R. 15 E., W. M.	Sanford Schultz and wife	Purchase	100.00
Wasco	Right of Way	14.40	The Dalles-California Highway and Wapinitia Highway at Junction	In N. ½ of N. ½ of Sec. 1, T. 5 S., R. 13 E., W. M.	Adolphus E. Mayhew et ux.	Purchase	993.00

Wasco	Right of Way	7.51	Wapinitia Highway, Wapinitia-Maupin Junction section	In NE. ¼ of Sec. 2, T. 5 S., R. 13 E., W. M.	Ernest A. Mayhew and wife	Purchase	500.00
Wasco	Right of Way	6.66	Wapinitia Highway, Wapinitia-Maupin Junction section	In Sec. 9, T. 5 S., R. 13 E., W. M.	Floyd L. Kelley	Purchase	1,000.00
Wasco	Right of Way	16.35	Wapinitia Highway, Wapinitia-Maupin Junction section	In Secs. 8, 17 and 18, T. 5 S., R. 13 E., W. M.	Plimpton J. Kelley Estate	Purchase	452.60
Wasco	Right of Way	4.10	Wapinitia Highway Wapinitia-Maupin Junction section	In W. ½ of SW. ¼ of Sec. 18, T. 5 S., R. 13 E., W. M.	F. M. Confer and wife	Purchase	205.00
Wasco	Right of Way	7.89	Wapinitia Highway Wapinitia-Maupin Junction section	In Secs. 3 and 10, T. 5 S., R. 13 E., W. M.	Ollie D. Bothwell	Purchase	750.00
Wasco	Right of Way	9.94	Wapinitia Highway Wapinitia-Maupin Junction section	In SE. ¼ of Sec. 13, T. 5 S., R. 12 E., W. M.	J. S. Brown and A. J. Hammer	Purchase	625.00
Wasco	Right of Way	5.53	Wapinitia Highway Wapinitia-Maupin Junction section	In S. ½ of SW. ¼ of Sec. 13, T. 5 S., R. 12 E., W. M.	Walter S. Woodside and wife	Purchase	750.00
Wasco	Right of Way	7.47	Wapinitia Highway Wapinitia-Maupin Junction section	In NW. ¼ of Sec. 18, T. 5 S., R. 13 E., W. M.	Julia F. Ward and husband	Purchase	600.00
Wasco	Right of Way	10.05	Wapinitia Highway Wapinitia-Maupin Junction section	In Secs. 8 and 9, T. 5 S., R. 13 E., W. M.	Leaetta Hagey and husband	Condemnation	2,000.00
Wasco	Right of Way	9.22	Wapinitia Highway Wapinitia-Maupin Junction section	In SW. ¼ of Sec. 2, T. 5 S., R. 13 E., W. M.	Edward Bothwell	Purchase	750.00
Wasco	Right of Way	11.43	Wapinitia Highway Wapinitia-Maupin Junction section	In NE. ¼ of Sec. 9 and NW. ¼ of Sec. 10, T. 5 S., R. 13 E., W. M.	Joseph A. Riggles and wife	Purchase	800.00
Washington	Right of Way	0.032	Tualatin Valley Highway at Beaverton	Part of Lot 11, Block "A" of Steele's Addition	Mrs. Rosanna Story	Purchase	800.00
Washington	Right of Way	0.06	Tualatin Valley Highway near Huber Station	Part of Lot 197, Johnson Estate Addition	Huber Commercial Club, Inc.	Gift	....
Washington	Right of Way	0.134	Tualatin Valley Highway near Beaverton	In Block 10 of Steele's Addition	Mrs. Maud Hendricks	Purchase	221.00
Washington	Right of Way	0.06	Tualatin Valley Highway near Beaverton	In Sec. 16, T. 1 S., R. 1 W., W. M.	W. E. Pegg et al.	Purchase	75.00
Washington	Right of Way	0.03	Tualatin Valley Highway at Aloha Station	Part of Lots 190 and 191 of Johnson Estate Addition	Sanford G. Rogers	Purchase	500.00

TABLE No. 43—Continued

County	Purpose for Which Acquired	Area in Acres	Approximate Location	Legal Description	From Whom Acquired	How Acquired	Consideration
Washington	Right of Way	1.96	West Side Highway at Tualatin River Bridge	In SW. ¼ of Sec. 15, T. 2 S., R. 1 W., W. M.	Roamers Rest, Inc.	Purchase	$2,000.00
Washington	Right of Way	0.06	Tualatin Valley Highway at Aloha Station	Part of Lots 18 and 19 of Alton Acreage Addition	James L. Turner and wife	Purchase	302.00
Washington	Right of Way	0.239	Tualatin Valley Highway near Beaverton	Part of Lots 6 and 7 of Steele's Addition	Mrs. Dena Vasileff	Purchase	425.00
Washington	Right of Way	0.027	Tualatin Valley Highway near Beaverton	Part of Lots 2 and 11 of Block "A" of Steele's Addition	Valmore H. Story and wife	Purchase	92.60
Washington	Right of Way	0.101	Tualatin Valley Highway near Beaverton	Part of Lot 5 of Block "D" of Steele's Addition	Lester E. Squires	Purchase	550.00
Washington	Right of Way	0.07	Tualatin Valley Highway at Aloha Station	Part of Lot 190 of Johnson Estate Addition	W. R. Shoemaker	Purchase	150.00
Washington	Right of Way	0.09	Tualatin Valley Highway at Aloha Station	Part of Lots 13 and 18 of Alton Acreage Addition	Shaw-Fear Co., Inc.	Purchase	353.75
Washington	Right of Way	0.11	Tualatin Valley Highway at Aloha Station	Part of Lot 191 of Johnson Estate Addition	Shaw-Fear Co., Inc.	Purchase	1.00
Washington	Right of Way	0.03	Tualatin Valley Highway at Aloha Station	In Lot 24 of Alton Acreage and Lot 191 of Johnson Estate Addition	James H. Sidwell and wife	Purchase	500.00
Washington	Right of Way	0.05	Tualatin Valley Highway at Aloha Station	Part of Lot 13 of Alton Acreage Addition	Lionel C. Krall and wife	Purchase	175.00
Washington	Right of Way	0.06	Tualatin Valley Highway at Aloha Station	Part of Lot 19 of Alton Acreage Addition	Matt King and wife	Purchase	1.00
Washington	Right of Way	0.35	West Side Highway at Cedar Creek Bridge	In SE. ¼ of Sec. 30, T. 2 S., R. 1 W., W. M.	Otto Krebs	Purchase	105.00
Washington	Right of Way	0.78	Tualatin Valley Highway near Multnomah County Line	In N. ½ of Sec. 12, T. 1 S., R. 1 W., W. M.	Augustine Benz and wife	Purchase	900.00
Washington	Right of Way	0.102	Tualatin Valley Highway near Beaverton	In Lot 1, Block "A," Steele's Addition	City of Beaverton	Purchase	380.65
Washington	Right of Way	0.03	Tualatin Valley Highway at Aloha Station	In Lot 18 of Alton Acreage Addition	A. J. Brickline	Purchase	86.40
Washington	Right of Way	1.72	West Side Highway at Tualatin River Bridge	In SW. ¼ of Sec. 15, T. 2 S., R. 1 W., W. M.	P. M. Boose and wife	Purchase	2,500.00
Washington	Right of Way	0.74	Tualatin Valley Highway near Multnomah County Line	In NE. ¼ of Sec. 12, T. 1 S., R. 1 W., W. M	Bernhard Benz	Condemnation	1,300.00
Washington	Right of Way	0.084	Tualatin Valley Highway at Aloha Station	Part of Lots 19 and 24 of Alton Acreage Addition	Aloha Finance Corp.	Purchase	715.54

Washington	Right of Way	0.03	Tualatin Valley Highway at Aloha Station	Part of Lot 18 of Alton Acreage Addition	Aloha Finance Corp.	Purchase	80.00
Washington	Right of Way	0.002	Tualatin Valley Highway at Aloha Station	Part of Lot 19 of Alton Acreage Addition	A. J. Gerron	Purchase	10.00
Washington	Right of Way	0.527	Tualatin Valley Highway between Multnomah County Line and Beaverton	In E. ½ of Sec. 11, T. 1 S., R. 1 W., W. M.	Charles H. Rogers	Purchase	289.80
Washington	Right of Way	0.284	Tualatin Valley Highway between Multnomah County Line and Beaverton	In Sec. 16, T. 1 S., R. 1 W., W. M.	Mrs. Bettie Vogl	Purchase	340.80
Washington	Right of Way	0.158	Tualatin Valley Highway near Beaverton	Part of Lots 6 and 7, Block "E," Steele's Addition	Albert E. Wilson	Purchase	1,327.70
Washington	Right of Way	0.46	Tualatin Valley Highway near Beaverton	Part of Lots 1 and 14, Block "B," Steele's Addition	Archdiocese of Portland in Oregon	Purchase	531.00
Washington	Right of Way	0.92	Tualatin Valley Highway between Multnomah County Line and Beaverton	In Sec. 16, T. 1 S., R. 1 W., W. M.	John A. Muessig and wife	Purchase	5,438.75

TABLE No. 44

ROCK QUARRIES, GRAVEL PITS AND OTHER SOURCES OF CONSTRUCTION MATERIALS ACQUIRED BY STATE HIGHWAY COMMISSION

During Period December 1, 1928, to September 30, 1930

County	Purpose for Which Acquired	Area in Acres	Approximate Location	Legal Description	From Whom Acquired	How Acquired	Consideration
Baker	Quarry Site	4.00	Old Oregon Trail, about 5 miles southeast of Baker	In NW. ¼ of NE. ¼ of Sec. 18, T. 10 S., R. 41 E., W. M.	Mrs. Zoe A. Stephenson, Baker	Purchase	$ 200.00
Baker	Quarry Site	6.48	Old Oregon Trail, about 5 miles northwest of Durkee	In NW. ¼ of SW. ¼ of Sec. 1, T. 11 S., R. 42 E., W. M.	Baker County	Gift	....
Baker	Quarry Site	1.01	Old Oregon Trail, about 2 miles east of Pleasant Valley	In S. ½ of S. ½ of Sec. 29 and NE. ¼ of NW. ¼ of Sec. 32, T. 10 S., R. 42 E., W. M.	Pearl Jensen and husband, Pleasant Valley	Purchase	101.00
Baker	Gravel Pit	6.00	Old Oregon Trail on County Road about 3 miles southwest of of Haines	In NE. ¼ of SE. ¼ of Sec. 18, T. 8 S., R. 39 E., W. M.	T. N. Braxton and wife, Boise, Idaho	Purchase	600.00
Baker	Quarry Site	40.00	Old Oregon Trail, ½ mile east of Pleasant Valley	NE. ¼ of NW. ¼ of Sec. 30, T. 10 S., R. 42 E., W. M.	U. S. Government	Section 17 Federal Aid Act	....
Baker	Sand Pit	0.67	Old Oregon Trail, ¾ mile north of Haines	In NE. ¼ of SW. ¼ of Sec. 28, T. 7 S., R. 39 E., W. M.	Edward Coles	10-year lease expires June 10, 1940	125.00
Benton	Quarry Site	1.54	Alsea Highway, 2 miles southwest of Alsea	In E. ½ of E. ½ of Sec. 3, T. 14 S., R. 8 W., W. M.	Charles S. Seeley	Purchase	450.00
Benton	Quarry Site	1.40	Alsea Highway, 2 miles southwest of Alsea	In NE. ¼ of SE. ¼ of Sec. 3, T. 14 S., R. 8 W., W. M.	D. D. Longhbottom and wife	Purchase	300.00
Columbia	Gravel Pit	1.00	Columbia River Highway, 3 miles south of Clatskanie	In SE. ¼ of SW. ¼ of Sec. 34, T. 8 N., R. 4 W., W. M.	Mikko Hovi and wife	Purchase	150.00
Coos	Quarry Site	0.92	Roosevelt Coast Highway in Bandon (Tupper Quarry)	In NE. ¼ of SW ¼ of Sec. 25, T. 28 S., R. 15 W., W. M.	J. F. Kronenberg	Purchase	1,500.00
Coos	Filler Pit	0.20	Roosevelt Coast Highway, 7.5 miles east of Bandon	In SW. ¼ of NE. ¼ of Sec. 30, T. 28 S., R. 13 W., W. M.	A. J. Sweet, Langlois	1-year lease expires May 10, 1931	25.00
Coos	Filler Pit	0.13	Roosevelt Coast Highway, 1½ miles south of Riverton	In NE. ¼ of SW. ¼ of Sec. 18, T. 28 S., R. 13 W., W. M.	Fred Sell and wife, Riverton	1-year lease expires Apr. 26, 1931	25.00
Coos	Filler Pit	....	Roosevelt Coast Highway, 4 miles east of Bandon	In SW. ¼ of NE. ¼ of Sec. 22, T. 28 S., R. 14 W., W. M.	Bartel Domenighini and wife, Bandon	1-year lease expires June 1, 1931	25.00

Curry	Gravel Pit	0.62	Roosevelt Coast Highway near Sixes River	In E½ of W ½ of Sec. 9, T. 32 S., R 15. W., W. M.	Clark Coffelt, Sixes	Purchase	200.00
Curry	Gravel Pit	3.05	Roosevelt Coast Highway, about 2 miles south of Sixes	In NW. ¼ of NW. ¼ of Sec. 21, T. 32 S., R. 15, W. M.	W. J. Sweet and wife	Agreement	3½c cu. yard
Curry	Gravel Pit	1.64	Roosevelt Coast Highway, about 2 miles south of Sixes	In E. ½ of NW. ¼ of Sec. 21, T. 32 S., R. 15 W., W. M.	David McKenzie and wife	Agreement	3½c cu. yard
Curry	Gravel Bar	....	Roosevelt Coast Highway at Hunters Creek	In NE. ¼ of Sec. 12, T. 37 S., R. 15 W. and NW. ¼ of Sec. 7, T. 37 S., R. 14 W., W. M.	Ira E. Brown and wife	2-year lease expires Dec. 31, 1932	5c cu. yard
Deschutes	Quarry Site	80.00	Central Oregon Highway at Bend	NE. ¼ of NE. ¼ of Sec. 33 and NW. ¼ of NW. ¼ of Sec. 34, T. 17 S., R. 12 E., W. M.	Francis L. Brown, Portland	Purchase	1,000.00
Deschutes	Gravel Pit	1.41	McKenzie-Bend Highway, between Tumalo and Bend	In W. ½ of NW. ¼ of Sec. 29, T. 16 S., R 12 E., W. M.	G. S. De Lude	10-year lease expires July 28, 1938	50.00
Grant	Quarry Site	12.50	Pendleton-John Day Highway, 2.3 miles south of Forest Boundary	In N. ½ of Sec. 31, T. 12 S., R. 31 E., W. M.	Arthur Begg and wife	Purchase	200.00
Harney	Quarry Site	4.0	Central Oregon Highway, about 7 miles west of Burns	In NE. ¼ of NE. ¼ of Sec. 7, T. 24 S., R. 30 E., W. M.	Oregon & Western Colonization Co., St. Paul, Minn.	Purchase	200.00
Harney	Filler Pit	1.00	Central Oregon Highway, 4 miles south of Burns	In SE. ¼ of Sec. 35, T. 23 S., R. 30 E., W. M.	Oregon & Western Colonization Co.	3-year lease expires July 22, 1932	100.00
Harney	Filler Pit	1.00	Central Oregon Highway, about 18 miles west of Burns	In SE. ¼ of Sec. 1, T. 24 S., R. 29 E., W. M.	Oregon & Western Colonization Co.	3-year lease expires June 17, 1932	100.00
Harney	Filler Pit	0.75	Central Oregon Highway, 14 miles west of Burns	In NE. ¼ of NE. ¼ of Sec. 5, T. 24 S., R. 29 E., W. M.	Oregon & Western Colonization Co.	3-year lease expires Oct. 14, 1932	75.00
Jackson	Quarry Site	18.05	Crater Lake Highway, 5.7 miles south of Trail	In SW. ¼ of NW. ¼ of Sec. 34, T. 34 S., R. 1 W., W. M.	J. S. Kinsey	Purchase	180.50
Jackson	Quarry Site	40.00	Crater Lake Highway, 8½ miles south of Prospect	SW. ¼ of SW. ¼ of Sec. 17, T. 33 S., R 2 E., W. M.	Dunn & Baker, Klamath Falls	Exchange of land	....
Jackson	Quarry Site	2.14	Crater Lake Highway near Junction of Indian Creek and Rogue River	In W. ½ of Sec. 15, T. 34 S., R. 1 W., W. M.	Jesse Miller and wife, Trail	14-months lease expires June 30, 1930	850.00
Josephine	Gravel Bar	4.51	Redwood Highway at Deer Creek	In S. ½ of SE. ¼ of Sec. 10, T. 38 S., R. 8 W., W. M.	E. T. Norman and wife	Purchase	450.00
Josephine	Gravel Bar	1.38	Redwood Highway at Deer Creek	In SE. ¼ of SE ¼ of Sec. 10, T. 38 S., R. 8 W., W. M.	Edward Bechtell and wife	Purchase	50.00

TABLE No. 44—Continued

County	Purpose for Which Acquired	Area in Acres	Approximate Location	Legal Description	From Whom Acquired	How Acquired	Consid- eration
Klamath	Quarry Site	80.00	Klamath Falls-Lakeview Highway, 1½ miles north of Dairy	NE. ¼ of SW. ¼ and SE. ¼ of NW. ¼ of Sec. 27, T. 38 S., R. 11½ E., W. M.	U. S. Government	Section 17 Federal Aid Act	$ …………
Klamath	Quarry Site	13.03	Klamath Falls-Lakeview Highway, 8½ miles east of Dairy	In NW. ¼ of Sec. 3 and NE. ¼ of Sec. 4, T. 38 S., R. 11 E., W. M.	Big Lakes Box Co., Klamath Falls	Purchase	325.75
Klamath	Quarry Site	11.13	Green Springs Highway, about 8 miles west of Keno	In SE. ¼ of NW. ¼ of Sec. 1, T. 40 S., R. 6 E., W. M.	W. B. Spencer, Keno	30-year lease expires Apr. 20, 1960	556.50
Klamath	Quarry Site	26.76	The Dalles-California Highway, 5 miles south of Merrill	In SW. ¼ of NE. ¼ of Sec. 10, T. 41 S., R. 11 E., W. M.	Emma J. Alexander & Son	Purchase	1,250.00
Klamath	Quarry Site	4.17	Green Springs Highway, 3 miles east of Hayden Creek	In SW. ¼ of NW. ¼ of Sec. 6, T. 40 S., R. 6 E., W. M.	Weyerhaeuser Timber Co.	Purchase	250.00
Klamath	Sand Pit	2.00	Klamath Falls-Lakeview Highway, 4 miles northeast of Dairy	In SW. ¼ of NE. ¼ of Sec. 13, T. 38 S., R. 11½ E., W. M.	Chas. A. Carlson, Dairy	Purchase	100.00
Klamath	Filler Pit	2.00	Klamath Falls-Lakeview Highway at Bly Mountain	In W. ½ of E. ½ of Sec. 5, T. 38 S., R. 11 E., W. M.	Caroline Ritter, Hildebrand	Purchase	140.00
Lake	Quarry Site	0.58	Fremont Highway, 3 miles south of Lakeview	In SE. ¼ of SE. ¼ of Sec. 35, T. 39 S., R. 20 E., W. M.	Lake Co. Loan & Savings Bank	Purchase	58.00
Lake	Quarry Site	2.61	Fremont Highway, 10 miles south of Lakeview	In SW. ¼ of SE. ¼ of Sec. 36, T. 40 S., R. 20 E., W. M.	J. F. Sherrard and wife, Lakeview	Purchase	500.00
Lake	Quarry Site	4.04	Fremont Highway, 4 miles south of Lakeview	In SE. ¼ of SE. ¼ of Sec. 35, T. 39 S., R. 20 E., W. M.	Geo. Fitzgerald and wife	Purchase	390.00
Lake	Quarry Site	1.92	Fremont Highway, 10 miles south of Lakeview (addition to old quarry)	In SW. ¼ of SE. ¼ of Sec. 36, T. 40 S., R. 20 E., W. M.	J. F. Sherrard and wife, Lakeview	Purchase	50.00
Lake	Filler Pit	1.00	Fremont Highway, about 2 miles north of New Pine Creek	In NW. ¼ of NE. ¼ of Sec. 12, T. 41 S., R. 20 E., W. M.	George Deter, Lakeview	1-year lease expires July 1, 1931	50.00
Lane	Quarry Site	1.95	McKenzie Highway, 1 mile south of McKenzie Bridge	In SW. ¼ of NE. ¼ of Sec. 23, T. 16 S., R. 5 E., W. M.	Grace Harbeck and husband, McKenzie Bridge	Purchase	292.50
Lane	Quarry Site	40.00	Siuslaw Highway, ½ mile southwest of Triangle Lake	In SE. ¼ of SE. ¼ of Sec. 19, T. 16 S., R. 7 W., W. M.	U. S. Government	Sec. 17, Federal Aid Act	…………

Lincoln	Quarry Site	3.44	Roosevelt Coast Highway at Eckman Slough	In SW. ¼ of NW. ¼ of Sec. 33, T. 13 S., R. 11 W., W. M.	J. E. Combs and wife	Purchase	650.00
Malheur	Gravel Pit	4.10	Old Oregon Trail, 6½ miles north of Ontario	In SE. ¼ of SW. ¼ of Sec. 3, T. 17 S., R. 47 E., W. M.	C. W. Buckley and wife, Eugene	Purchase	106.25
Malheur	Gravel Pit	7.08	Old Oregon Trail near Payette Spur Junction	In NE. ¼ of SE. ¼ of Sec. 9, T. 17 S., R. 47 E., W. M.	Bernard Eastman and wife	Purchase	199.24
Malheur	Gravel Pit	3.20	Old Oregon Trail, 14 miles north of Ontario	In N. ½ of Sec. 17, T. 16 S., R. 47 E., W. M.	C. H. Morehouse and wife, Salt Lake City	Purchase	100.00
Malheur	Gravel Pit	3.00	Old Oregon Trail, 6 miles south of Ontario	In NW. ¼ of NW. ¼ of Sec. 31, T. 18 S., R. 47 E., W. M.	Oregon & Western Colonization Co.	Purchase	300.00
Malheur	Gravel Pit	6.25	Old Oregon Trail on Island in Snake River at Weiser Junction	In N. ½ of Sec. 4, T. 16 S., R. 47 E., W. M.	Edwin J. Patch and wife	Purchase	312.50
Malheur	Quarry Site	8.5	Old Oregon Trail near Weiser Junction	In NW. ¼ of SW. ¼ of Sec. 17, T. 15 S., R. 46 E., W. M.	J. B. Merrill and wife, Weiser, Idaho	Purchase	400.00
Malheur	Borrow Pit	0.25	Old Oregon Trail, 9 miles north of Ontario	In SW. ¼ of SW. ¼ of Sec. 23, T. 16 S., R. 47 E., W. M.	Wm. F. Vincent and wife, Payette, Ida.	1-year lease expires Aug. 22, 1931	25.00
Sherman	Quarry Site	7.15	Sherman Highway, ¼ mile north of Grass Valley	In NW. ¼ of NE. ¼ of Sec. 26, T. 2 S., R. 16 E., W. M.	Arch L. Russell and wife	Purchase	500.00
Sherman	Quarry Site	3.76	Sherman Highway, 0.4 mile north of Moro	In NE. ¼ of NW. ¼ of Sec. 17, T. 1 S., R. 17 E., W. M.	Horace W. Strong and wife, Moro	Purchase	376.00
Sherman	Quarry Site	10.55	Columbia River Highway, 1 mile east of Rufus	In SE. ¼ of NE. ¼ of Sec 32, T. 3 N., R 17 E., W. M.	C. M. Kuypers, Moro	Purchase	250.00
Sherman	Quarry Site	....	Sherman Highway in town of Moro	Sec. 18, T. 1 S., R. 17 E., W. M.	O.-W. R. & N. Co.	4-year lease, expires Dec. 31, 1933	10.00 year
Sherman	Quarry Site	7.4	Near Columbia River Highway and Fulton Canyon Market Road	In E. ½ of NE. ¼ of Sec. 24, T. 2 N., R. 15 E., W. M.	Walter H. Carlisle and wife	Purchase	160.00
Tillamook	Quarry Site	2.50	Roosevelt Coast Highway at Jim Creek	In NW. ¼ of SW. ¼ of Sec. 4, T. 6 S., R. 10 W., W. M.	U. S. Forest Service	Special Use Permit	....
Tillamook	Gravel Bar	3.01	Roosevelt Coast Highway, 1 mile south of Hemlock	In SE. ¼ of NW. ¼ of Sec. 18, T. 3 S., R. 9 W., W. M.	J. T. Harvey and wife	3-year lease expires Aug. 1, 1933	300.00
Tillamook	Gravel Bar	4.98	Roosevelt Coast Highway, 1 mile south of Hemlock	In N. ½ of N. ½ of Sec. 18, T. 3 S., R. 9 W., W. M.	G. W. Wallace	3-year lease expires Aug. 30, 1933	300.00
Umatilla	Quarry Site	1.70	Oregon-Washington Highway, between Milton and Athena	In N. ½ of SW. ¼ of Sec. 13, T. 5 N., R. 35 E., W. M.	E. C. Schrimpf, Weston	Purchase	411.40
Umatilla	Gravel Pit	1.48	Columbia River Highway, 2 miles west of Umatilla	In SE. ¼ of SE. ¼ of Sec. 14, T. 5 N., R. 27 E., W. M.	W. W. Agee, Pendleton	Purchase	75.00

TABLE No. 44—Continued

County	Purpose for Which Acquired	Area in Acres	Approximate Location	Legal Description	From Whom Acquired	How Acquired	Consid-eration
Union	Gravel Pit	1.00	Ladd Canyon Market Road, 2 miles south of Old Oregon Trail at Lone Pine Station	In NW. ¼ of NW. ¼ of Sec. 1, T. 4 S., R 38 E., W. M.	Alex L. Furgason, La Grande	1-year lease expires Dec. 1, 1930	$ 125.00
Union	Gravel Pit	0.21	Wallowa Lake Highway at Elgin	In SE. ¼ of SE. ¼ of Sec. 15, T. 1 N., R. 39 E., W. M.	W. C. Hill and wife	Purchase	50.00
Union	Gravel Pit	0.20	Wallowa Lake Highway at Elgin	In SW. ¼ of SE. ¼ of Sec. 15, T. 1 N., R. 39 E., W. M.	Jesse Crum and wife	Purchase	50.00
Union	Gravel Pit	2.86	Old Oregon Trail, 8 miles west of La Grande	In NE. ¼ of SE. ¼ of Sec. 31, T. 2 S., R. 37 E., W. M.	W. W. Gray and wife	Purchase	100.00
Wallowa	Gravel Pit	1.64	Wallowa Lake Highway at west limits of Enterprise	In NW. ¼ of NW. ¼ of Sec. 2, T. 2 S., R. 44 E., W. M.	Byron F. Miller	4-months lease, expired Dec. 31, 1929	100.00
Wallowa	Quarry Site	2.16	Wallowa Lake Highway, between Enterprise and Lostine	In S. ½ of N. ½ of Sec. 30, T. 1 S., R. 44 E., W. M.	Chas. Emmons, Enterprise	3-months lease expired Nov. 15, 1929	25.00
Wallowa	Filler Pit	1.10	Wallowa Lake Highway near Enterprise	In SW. ¼ of SW. ¼ of Sec. 35, T. 1 S., R. 44 E., W. M.	Tolle Johnson	1-year lease expired Aug. 1, 1930	75.00
Wallowa	Filler Pit	0.91	Wallowa Lake Highway, 5 miles west of Enterprise	In SW. ¼ of NE. ¼ of Sec. 30, T. 1 S., R. 44 E., W. M.	W. R. Stein	1-year lease expired July 11, 1930	50.00
Wasco	Gravel Pit	1.00	The Dalles-California Highway, 1 mile north of Tygh Valley	In NE. ¼ of NW. ¼ of Sec. 4, T. 4 S., R. 13 E., W. M.	Charles W. Wing	5-year lease expires April 9, 1935	25.00
Wasco	Filler Pit	0.83	The Dalles-California Highway, 9½ miles south of Dufur	In SE. ¼ of SW. ¼ of Sec. 3, T. 3 S., R. 13 E., W. M.	O. H. Russell	Purchase	100.00

TABLE No. 45

STOCK PILE AND STORAGE SITES ACQUIRED BY STATE HIGHWAY COMMISSION

During Period December 1, 1928, to September 30, 1930

County	Purpose for Which Acquired	Area in Acres	Approximate Location	Legal Description	From Whom Acquired	How Acquired	Consideration
Baker	Stock Pile Site	0.57	Old Oregon Trail at Quartz Station	In SW. ¼ of SW. ¼ of Secs. 1, T. 10 S., R. 40 E., W. M.	C. T. Daugherty, Baker, Oregon	3-year lease expires Oct. 15, 1932	$ 15.00
Baker	Stock Pile Site	40.00	Old Oregon Trail, about 2 miles southeast of Pleasant Valley	NE. ¼ of NW. ¼ of Sec. 30, T. 10 S., R. 42 E., W. M.	U. S. Government	Federal Aid Act	....
Baker	Stock Pile Site	40.00	Old Oregon Trail, about 3 miles north of Durkee	SE. ¼ of SW. ¼ of Sec. 7, T. 11 S., R. 43 E., W. M.	U. S. Government	Federal Aid Act	....
Baker	Stock Pile Site	1.01	Old Oregon Trail, about 5 miles east of Pleasant Valley	In S. ½ of SW. ¼ of Sec. 35, T. 10 S., R. 42 E., W. M.	Benjamin J. Rizor and wife	Purchase	50.50
Baker	Stock Pile Site	0.80	Old Oregon Trail, between Pleasant Valley and Durkee	In SE. ¼ of SW. ¼ of Sec. 29, T. 10 S., R. 42 E., W. M.	Christian Jensen and wife	5-year lease expires July 14, 1935	75.00
Benton	Stock Pile Site	....	West Side Pacific Highway, ½ mile north of Lewisburg	In SE. ¼ of Sec. 1, T. 11 S., R. 5 W., W. M.	Geo. Armstrong, Corvallis	1-year lease expires Mar. 26, 1931	10.00
Benton	Stock Pile Site	....	West Side Pacific Highway at Bruce	50-ft. x 380-ft. tract in Bruce	S. P. Ry. Co.	1-year lease expires April 1, 1931	3.00 per mo.
Benton	Stock Pile Site	....	West Side Pacific Highway north of Corvallis	100-ft. x 100-ft.	J. M. Culbertson, Corvallis	1-year lease expires April 1, 1931	5.00
Benton	Stock Pile Site	....	Corvallis-Newport Highway, 1¼ miles east of Blodgett	100-ft. x 100-ft.	Karl Hawley, Blodgett	6-months lease expires Dec. 10, 1930	5.00
Clatsop	Stock Pile Site	0.40	Roosevelt Coast Highway, 1 mile west of Necanicum	In NE. ¼ of NW. ¼ of Sec. 21, T. 5 N., R. 9 W., W. M.	Margaret Grimell	2-year lease expires July 11, 1932	30.00
Columbia	Stock Pile Site	1.06	Columbia River Highway at Clatskanie	In lot 7 of Bryant Estate Tract in Sec. 8, T. 7 N., R. 4 W., W. M.	Millicent S. Conyers	3-year lease expires June 1, 1931	15.00 per mo.
Coos	Stock Pile Site	0.81	Roosevelt Coast Highway near Lampa Creek between Riverton and Bandon	In SW. ¼ of NE. ¼ of Sec. 30, T. 28 S., R. 13 W., W. M.	A. J. Sweet, Langlois, Oregon	5-year lease expires Mar. 1, 1935	100.00
Coos	Stock Pile Site	1.00	Roosevelt Coast Highway, 2 miles east of Bandon	In SW. ¼ of SE. ¼ of Sec. 21, T. 28 S., R. 14 W., W. M.	D. P. Jenkins, Bandon	5-year lease expires April 1, 1935	75.00

TABLE No. 45—Continued

County	Purpose for Which Acquired	Area in Acres	Approximate Location	Legal Description	From Whom Acquired	How Acquired	Consideration
Coos	Stock Pile Site	0.51	Roosevelt Coast Highway between Riverton and Bandon	In NW. ¼ of NW. ¼ of Sec. 18, T. 29 S., R. 14 W., W. M.	Geo. W. Cox and wife, Bandon	5-year lease expires Mar. 15, 1935	$ 100.00
Coos	Stock Pile Site	0.80	Roosevelt Coast Highway at Junction of State Fishery Road and old County Road to Bandon	In SW. ¼ of NE. ¼ of Sec. 29, T. 28 S., R. 14 W., W. M.	Bandon Beach Realty Co.	5-year lease expires Apr. 15, 1935	75.00
Coos	Stock Pile Site	....	Roosevelt Coast Highway in Town of Bandon	Lots 1 to 8 and 25 to 32 in Block 25 of Portland Addition to Bandon	R. W. Squire, Bandon	5-year lease expires May 15, 1935	75.00
Coos	Stock Pile Site	0.86	Roosevelt Coast Highway near Lampa Creek	In Lot 5 of Sec. 30, T. 28 S., R. 13 W., W. M.	Bonnie I. Welch, Riverton	5-year lease expires June 1, 1935	100.00
Coos	Stock Pile Site	0.18	Coos Bay-Roseburg Highway near Sandy Creek	In SW. ¼ of NE. ¼ of Sec. 33, T. 29 S., R. 10 W., W. M.	Lawrence B. Jennings and wife	5-year lease expires May 4, 1934	50.00
Coos	Stock Pile Site	0.57	Coos Bay-Roseburg Highway near Bridge	In NW. ¼ of SE. ¼ of Sec. 28, T. 29 S., R. 11 W., W. M.	Frank E. Mecum and wife, Bridge	5-year lease expires May 4, 1934	100.00
Curry	Stock Pile Site	0.60	Roosevelt Coast Highway at Junction with Cape Blanco Road	In SE. ¼ of NW. ¼ of Sec. 16, T. 32 S., R. 15 W., W. M.	W. J. Sweet & wife, Bandon	5-year lease expires Mar. 1, 1935	75.00
Curry	Stock Pile Site	0.838	Roosevelt Coast Highway between Denmark and Port Orford	In SW. ¼ of NE. ¼ of Sec. 15, T. 31 S., R. 15 W., W. M.	J. S. Capps and wife, Langlois	5-year lease expires Mar. 31, 1935	150.00
Curry	Stock Pile Site	0.94	Roosevelt Coast Highway between Denmark and Port Orford	In SE. ¼ of SE. ¼ of Sec. 29, T. 32 S., R. 15 W., W. M.	W. S. Robinson	5-year lease expires April 1, 1935	75.00
Curry	Stock Pile Site	0.92	Roosevelt Coast Highway, 2 miles south of Denmark	In E. ½ of NW. ¼ of Sec. 27, T. 31 S., R. 15 W., W. M.	G. W. Sydnam, Denmark	5-year lease expires April 1, 1935	75.00
Curry	Stock Pile Site	1.38	Roosevelt Coast Highway between Denmark and Port Orford	In SE. ¼ of SE. ¼ of Sec. 33, T. 31 S., R. 15 W., W. M.	John D. Goss, W. H. Wan and A. B. Collier	5-year lease expires Mar. 15, 1935	100.00
Curry	Stock Pile Site	0.07	Roosevelt Coast Highway near Elk River	In E. ½ of SE. ¼ of NE. ¼ of Sec. 20, T. 32 S., R. 15 W., W. M.	David M. McKenzie and wife, Port Orford	5-year lease expires Mar. 20, 1935	15.00
Curry	Stock Pile Site	1.04	Roosevelt Coast Highway between Denmark and Port Orford	In W. ½ of SE. ¼ of NE. ¼ of Sec. 20, T. 32 S., R. 15 W., W. M.	Ena McKenzie, Port Orford	5-year lease expires Mar. 20, 1935	100.00
Curry	Stock Pile Site	0.50	Roosevelt Coast Highway between Gold Beach and Myers Creek	In E. ½ of E. ½ of Sec. 13, T. 37 S., R. 15 W., W. M.	Ezra Turner and wife, Gold Beach	5-year lease expires May 1, 1935	100.00

Curry	Stock Pile Site	1.10	Roosevelt Coast Highway between Gold Beach and Myers Creek	In SE. ¼ of NE. ¼ of Sec. 36, T. 37 S., R. 15 W., W. M.	Dennis Cunniff Estate, Gold Beach	1-year lease expires June 10, 1931	50.00
Gilliam	Stock Pile Site	0.69	Two tracts, one at Speece and one 2 miles south of Speece on John Day Highway	One in SE. ¼ of Sec. 11 and other in SW. ¼ of Sec. 24, T. 2 S., R. 21 E., W. M.	O. W. R. & N. Company	5-year lease expires Dec. 31, 1932	25.00
Hood River	Stock Pile Site	1.00	Columbia River Highway, 6½ miles east of Cascade Locks	In NW. ¼ of NW. ¼ of Sec. 1, T. 2 N., R. 8 E., W. M.	L. L. Oleman, The Dalles	3-year lease expires June 1, 1933	75.00
Hood River	Stock Pile Site	0.55	Columbia River Highway at Viento Park	In NE. ¼ of SE. ¼ of Sec. 34, T. 3 N., R. 9 E., W. M.	J. O. Jones, Viento	3-year lease expires June 21, 1933	25.00
Hood River	Stock Pile Site	0.50	Columbia River Highway near Cascade Locks	In lot 5 of Sec. 12, T. 2 N., R. 7 E., W. M.	F. J. McGettigan, San Diego	3-year lease expires May 1, 1933	75.00
Hood River	Stock Pile Site	0.69	Columbia River Highway west of Hood River about 3 miles	In Lot 1 of Sec. 32, T. 3 N., R. 10 E., W. M.	Robert Tazwell and wife, Hood River	3-year lease expires May 1, 1933	25.00
Hood River	Stock Pile Site	0.37	Columbia River Highway, Cascade Locks (4 miles east)	In lot 3 of Sec. 33, T. 3 N., R. 8 E., W. M.	Richard Woodward, Cascade Locks	3-year lease expires July 1, 1933	75.00
Jackson	Stock Pile Site	0.39	Green Spring Highway, 2 miles east of Pinehurst	In NE. ¼ of NW. ¼ of Sec. 3, T. 40 S., R. 4 E., W. M.	Weyerhaeuser Timber Co.	5-year lease expires Aug. 14, 1935	1.00
Jackson	Stock Pile Site	0.26	Green Springs Highway at Soda Gulch	In NE. ¼ of SW. ¼ of Sec. 36, T. 39 S., R. 2 E., W. M.	Geo. D. Williams and wife, Ashland	1-year lease expires June 30, 1931	50.00
Jackson	Stock Pile Site	1.79	Green Springs Highway, 3 miles west of Pinehurst	In E. ½ of NW. ¼ of Sec. 12, T. 40 S., R. 3 E., W. M.	Henry Lumber Co., Ashland	Purchase	17.90
Klamath	Stock Pile Site	2.65	The Dalles-California Highway in town of Merrill	Block 50 in Lot 3 of Sec. 11, T. 21 S., R. 10 E., W. M.	Helen Brown, Geo. M. Casey and wife, Portland	Purchase	500.00
Klamath	Stock Pile Site	0.17	Green Springs Highway, 6 miles east of Pinehurst	In NE. ¼ of NW. ¼ of Sec. 3, T. 40 S., R. 5 E., W. M.	Weyerhaeuser Timber Co.	5-year lease expires Aug. 14, 1935	1.00
Klamath	Stock Pile Site	0.15	Green Springs Highway at Parker Mountain, 5 miles east of Pinehurst	In SW. ¼ of SE. ¼ of Sec. 31, T. 39 S., R. 5 E., W. M.	Weyerhaeuser Timber Co.	5-year lease expires Aug. 14, 1935	1.00
Lake	Stock Pile Site	1.00	Fremont Highway, 3 miles north of California State Line	In SE. ¼ of SW. ¼ of Sec. 36, T. 40 S., R. 20 E., W. M.	J. F. Sherrard and wife	Purchase	150.00
Lake	Stock Pile Site	....	Fremont Highway at Lakeview	Lots 6, 7, 8, 9, 10, 11, 12 and part of Lots 13, 14, 15, Block 342, Oregon Valley Land Co. Addition	Favell-Utley Realty Co.	Purchase	250.00
Lane	Stock Pile Site	....	Pacific Highway, 5 miles north of Eugene	In NW. ¼ of NE. ¼ of Sec. 27, T. 16 S., R. 4 W., W. M.	R. B. Richardson and wife, Junction City	2-year lease expires Mar. 21, 1932	20.00

TABLE No. 45—Continued

County	Purpose for Which Acquired	Area in Acres	Approximate Location	Legal Description	From Whom Acquired	How Acquired	Consideration
Lane	Stock Pile Site	....	Pacific Highway, between Junction City and Eugene	In NE. ¼ of Sec. 11 and SE. ¼ of Sec. 2, T. 17 S., R. 4 W., W. M.	William Forrester and wife, Eugene	2-year lease expires Mar. 20, 1932	$ 20.00
Lane	Stock Pile Site	....	Pacific Highway at Junction City	100-ft. x 250-ft. in Junction City	S. P. Ry. Co.	1-year lease expires April 1, 1931	3.00 per mo.
Lane	Stock Pile Site	0.229	West Side Pacific Highway, 2.7 miles north of Junction City	100-ft. x 100-ft. in NW. ¼ of Sec. 19, T. 15 S., R. 4 W., W. M.	Joe Strome, Junction City	6-months lease expires Aug. 18, 1930	1.00
Lane	Stock Pile Site	0.52	McKenzie Highway, about 3 miles east of Springfield	In NE. ¼ of SW. ¼ of Sec. 32, T. 17 S., R. 2 W., W. M.	Carl Carpenter and wife, Springfield	2-year lease expires April 7, 1932	30.00
Lane	Stock Pile Site	0.34	Siuslaw Highway, 3 miles west of Triangle Lake	In NW. ¼ of Sec. 31, T. 16 S., R. 7 W., W. M.	Dewey Rust, Blachly	2-year lease expires June 1, 1932	10.00
Lane	Stock Pile Site	0.895	Siuslaw Highway, 1 mile east of Blachly	In NW. ¼ of SE. ¼ of Sec. 10, T. 16 S., R. 7 W., W. M.	Fred Duckett and wife, Blachly	2-year lease expires July 21, 1932	20.00
Lane	Stock Pile Site	0.52	McKenzie Highway near McKenzie Bridge P. O.	In SW. ¼ of SW. ¼ of Sec. 13, T. 16 S., R. 5 E., W. M.	Geo. T. Hall and wife	2-year lease expires Aug. 1, 1932	20.00
Lane	Stock Pile Site	0.54	McKenzie Highway, 2½ miles east of Thurston	In NE. ¼ of Sec. 36, T. 17 S., R. 2 W., W. M.	Carl B. Kramer and Geo. A. Kramer and wife	5-year lease expires Sept. 15, 1935	50.00
Lane	Stock Pile Site	0.46	Willamette Highway, 10 miles south of Lowell Bridge	In NW. ¼ of NW. ¼ of Sec. 18, T. 20 S., R. 2 E., W. M.	John Pelzel and wife	5-year lease expires Sept. 1, 1935	25.00
Lincoln	Stock Pile Site	....	Alsea Highway, 9 miles west of Alsea	In NE. ¼ of Sec. 24, T. 14 S., R. 9 W., W. M.	Chas. Seeley	5-year lease expires Apr. 24, 1935	25.00
Linn	Stock Pile Site	0.34	Santiam Highway in Sweet Home	In NE. ¼ of Sec. 31, T. 13 S., R. 1 E., W. M.	Henry R. Slaven and wife, Coburg	2-year lease expires Oct. 15, 1931	20.00
Linn	Stock Pile Site	1.10	Santiam Highway, 3½ miles northwest of Sweet Home	In NW. ¼ of NW. ¼ of Sec. 23, T. 13 S., R. 1 W., W. M.	Henry Blankenship and wife, Waterloo	10-year lease expires Nov. 27, 1939	10.00
Linn	Stock Pile Site	....	Pacific Highway at Junction of Millersburg Road	In SE. ¼ of Sec. 21, T. 10 S., R. 3 W., W. M.	Albyn Esson, Albany	1-year lease expires Mar. 31, 1931	10.00
Linn	Stock Pile Site	0.23	Pacific Highway near Tangent	In NE. ¼ of Sec. 12, T. 12 S., R. 4 W., W. M.	J. U. Ross, Tangent	6-months lease expires Sept. 20, 1930	1.00
Linn	Stock Pile Site	0.23	Pacific Highway, 2.3 miles south of Jefferson	In SW. ¼ of Sec. 10, T. 10 S., R. 4 W., W. M.	E. W. Van der Velden	1-year lease expires June 6, 1931	5.00
Linn	Stock Pile Site	....	Pacific Highway in Albany	Lots 1, 2 of Block 1 of Burkhart Addition	J. Deo McClain, Albany	9 months lease expires Jan. 1, 1931	5.00

Linn	Stock Pile Site	....	Pacific Highway in town of Shedd	100-ft. x 150-ft., 900-ft. N. of RR. Station	S. P. Ry. Co.	1-year lease expires Dec. 26, 1930	30.00
Linn	Stock Pile Site	0.40	Santiam Highway, 3½ miles east of Lebanon	In N. ½ of Sec. 30, T. 12 S., R. 1 W., W. M.	Kathryn Stevens	2-year lease expires Apr. 12, 1931	25.00
Malheur	Stock Pile Site	1.29	Old Oregon Trail, 8¼ miles northwest of Weiser Spur	In NE. ¼ of SW. ¼ of Sec. 17, T. 15 S., R. 46 E., W. M.	Herman A. Haines, Weiser, Idaho	3-year lease expires Dec. 1, 1932	15.00
Malheur	Stock Pile Site	1.32	Old Oregon Trail, 5½ miles northwest of Weiser Spur	In E. ½ of E. ½ of Sec. 28, T. 15 S., R. 46 E., W. M.	Roy Martin, Weiser, Idaho	3-year lease expires Dec. 1, 1932	15.00
Malheur	Stock Pile Site	0.82	Central Oregon Highway at Cottonwood Creek	In S. ½ of SW. ¼ of Sec. 34, T. 19 S., R. 42 E., W. M.	E. R. Knott and wife, Harper	5-year lease expires Feb. 1, 1935	15.00
Malheur	Stock Pile Site	1.49	Central Oregon Highway, about 7 miles southwest of Vale	In SE. ¼ of SE. ¼ of Sec. 6, T. 19 S., R. 44 E., W. M.	Malheur County	Gift	....
Malheur	Stock Pile Site	7.78	Central Oregon Highway, 3½ miles southwest of Vale	In SE. ¼ of SE. ¼ of Sec. 3, T. 19 S., R. 44 E., W. M.	Malheur County	Gift	....
Marion	Stock Pile Site	0.229	Pacific Highway, 2 miles north of Jefferson	In NE. ¼ of Sec. 35, T. 9 S., R. 3 W., W. M.	M. Blanch Goin, Jefferson	6-months lease expires Oct. 14, 1930	10.00
Marion	Stock Pile Site	....	Pacific Highway in town of Jefferson	In Sec. 12, T. 10 S., R. 3 W., W. M.	S. P. Co.	1-year lease expires Apr. 10, 1931	3.00 per mo.
Multnomah	Stock Pile Site	0.50	Columbia River Highway, about 2 miles east of Troutdale	In Sec. 35, T. 1 N., R. 4 E., W. M.	Peter C. Hansen, Troutdale	2-year lease expires May 10, 1932	75.00
Multnomah	Stock Pile Site	1.00	Columbia River Highway at Springdale	In Sec. 33, T. 1 N., R. 4 E., W. M.	Hugh S. Reeves and wife, Springdale	2-year lease expires May 10, 1932	50.00
Polk	Stock Pile Site	....	Salem-Dallas Highway at West Salem	Lots 1 and 2 of Block 2 of Churchmere Addition	F. L. Wood, Salem	3-months lease expired July 7, 1930	15.00
Sherman	Stock Pile Site	0.32	Sherman Highway near Moro	In NW. ¼ of Sec. 11, T. 2 S., R. 16 E., W. M.	Eastern Oregon Land Co.	5-year lease expires July 1, 1934	10.00
Sherman	Stock Pile Site	0.50	Sherman Highway near Grass Valley	In SW. ¼ of Sec. 35, T. 2 S., R. 16 E., W. M.	Eastern Oregon Land Co.	5-year lease expires July 1, 1934	10.00
Sherman	Stock Pile Site	2.07	Sherman Highway at Miller Station	In NW. ¼ of SW. ¼ of Sec. 24, T. 2 N., R. 15 E., W. M.	O.-W. R. & N. Co.	4-year lease expires Dec. 31, 1933	90.00
Sherman	Stock Pile Site	2.03	Columbia River Highway, 2 miles east of Rufus	In SW. ¼ of NE. ¼ of Sec. 32, T. 3 N., R. 17 E., W. M.	Geo. G. Addington, Rufus	5-year lease expires Feb. 21, 1935	50.00

TABLE No. 45—Continued

County	Purpose for Which Acquired	Area in Acres	Approximate Location	Legal Description	From Whom Acquired	How Acquired	Consideration
Sherman	Stock Pile Site	2.41	Columbia River Highway, 2.6 miles east of Rufus	In NW. ¼ of SW. ¼ of Sec. 27, T. 3 N., R. 17 E., W. M.	Clara Pyburn and husband, Rufus	5-year lease Expires Mar. 1, 1935	$ 50.00
Sherman	Stock Pile Site	1.18	Columbia River Highway, 1 mile west of Rufus	In S. ½ of NE. ¼ of Sec. 1, T. 2 N., R. 16 E., W. M.	Mattie J. McDonald, Arlington	5-year lease expires Apr. 15, 1935	60.00
Sherman	Stock Pile Site	1.00	Columbia River Highway at Biggs Station	In Lot 2 of Sec. 8, T. 2 N., R. 16 E., W. M.	Lulu B. Fulton, Portland	5-year lease expires Jan. 1, 1935	50.00
Tillamook	Stock Pile Site	0.62	Roosevelt Coast Highway, ⅓ mile north of Hemlock	In NE. ¼ of NE. ¼ of Sec. 7, T. 3 S., R. 9 W., W. M.	W. M. Pick and wife	2-year lease expires Sept. 11, 1932	30.00
Tillamook	Stock Pile Site	0.38	McMinnville-Tillamook Highway, 2 miles north of Dolph	In SW. ¼ of SE. ¼ of Sec. 17, T. 5, S., R. 9 W., W. M.	J. O. Anderson	8-year lease expires Feb. 9, 1937	50.00
Tillamook	Stock Pile Site	0.48	McMinnville-Tillamook Highway, ½ mile east of Dolph	In SE. ¼ of SE. ¼ of Sec. 28, T. 5 S., R. 9 W., W. M.	Geo. T. Baxter	7-year lease expires Jan. 17, 1936	60.00
Tillamook	Stock Pile Site	0.464	Roosevelt Coast Highway near Oretown	In NE. ¼ of NE. ¼ of Sec. 16, T. 5 S., R. 10 W., W. M.	Robert Fryrear and wife	2-year lease expires Feb. 25, 1931	20.00
Tillamook	Stock Pile Site	0.33	Roosevelt Coast Highway near Three Rivers	In NW. ¼ of SE. ¼ of Sec. 32, T. 4 S., R. 9 W., W. M.	U. S. Forest Service	Special use permit	....
Tillamook	Stock Pile Site	0.25	Roosevelt Coast Highway near Three Rivers	In NE. ¼ of NW. ¼ of Sec. 9, T. 5 S., R. 9 W., W. M.	U. S. Forest Service	Special use permit	....
Umatilla	Stock Pile Site	1.00	Umatilla Indian Reservation	In NW. ¼ of NW. ¼ of Sec. 11, T. 2 N., R. 33 E., W. M.	U. S. Indian Service	Lease for indefinite period	....
Union	Stock Pile Site	0.96	Old Oregon Trail, between Kamela and Hilgard	In NW. ¼ of SW. ¼ of Sec. 35, T. 2 S., R. 37 E., W. M.	Stoddard Lumber Co.	Purchase	40.00
Wasco	StockPile Site	0.78	Columbia River Highway, ½ mile west of Sherman County Line	In SE. ¼ of Sec. 22, T. 2 N., R. 15 E., W. M.	Columbia Deschutes Power Co.	5-year lease expires July 1, 1934	10.00
Wasco	StockPile Site	1.22	Columbia River Highway at Celilo	In N. ½ of Lot 4, Sec. 16, T. 2 N., R. 15 E., W. M.	O.-W. R. & N. Co.	5-year lease expires Dec. 31, 1934	10.00
Wasco	StockPile Site	2.00	Columbia River Highway, 5 miles east of Mosier	In NW. ¼ of SW. ¼ of Sec. 3, T. 2 N., R. 12 E., W. M.	Edward L. Leininger, Mosier	3-year lease expires Sept. 30, 1932	50.00
Wasco	StockPile Site	0.78	Columbia River Highway, 5½ miles west of Rowena	In NE. ¼ of NW. ¼ of Sec. 5, T. 2 N., R. 12 E., W. M.	W. A. Marsh, Mosier	3-year lease expires Oct. 1, 1932	45.00
Wasco	StockPile Site	0.22	Columbia River Highway at Chenowith Creek	In D. L. C. No. 37, Sec. 29, T. 2 N., R 13, E., W. M.	Fred Wetle and wife, The Dalles	5-year lease expires June 23, 1935	50.00

Wasco	Stock Pile Site	0.98	Columbia River Highway, 1½ miles west of Mosier	In NW. ¼ of SW. ¼ of Sec. 2, T. 2 N., R. 11 E., W. M.	Frederick W. Reils and wife, Portland	3-year lease expires June 1, 1933	60.00
Wasco	Stock Pile Site	0.50	Columbia River Highway, 1¼ miles east of Mosier	In SW. ¼ of NW. ¼ of Sec. 6, T. 2 N., R. 12 E., W. M.	F. A. Shogren and wife	3-year lease expires June 1, 1933	50.00
Washington	Stock Pile Site	....	Tualatin Valley Highway in town of Cornelius	In Sec. 5, T. 1 S., R. 3 W., W. M.	S. P. Company	1-year lease expires Apr. 15, 1931	3.00 per mo.
Yamhill	Stock Pile Site	0.42	McMinnville-Tillamook Highway, 2¼ miles west of Grande Ronde	In SE. ¼ of NW. ¼ of Sec. 2, T. 6 S., R. 8 W., W. M.	A. G. Langley	4-year lease expires June 17, 1933	25.00
Yamhill	Stock Pile Site	....	McMinnville-Tillamook Highway, about 2 miles west of McMinnville	In NE. ¼ of SE. ¼ of Sec. 30, T. 4 S., R. 4 W., W. M.	W. J. O'Dell, McMinnville	1½-year lease expires Oct. 20, 1931	20.00
Yamhill	Stock Pile Site	0.229	McMinnville-Tillamook Highway at Pringles Corner	In Sec. 11, T. 5 S., R. 5 W., W. M.	E. F. De Lashmutt	1-year lease expires April 1, 1931	20.00

TABLE No. 46

RECAPITULATION OF TRAFFIC COUNTS MADE BY THE STATE HIGHWAY DEPARTMENT DURING THE YEAR 1929

The numbers given in this table are the numbers of vehicles of all kinds passing the observation points listed, between the hours of 6 a. m. and 10 p. m. on the dates stated in the column headings. Similar information for the year 1930 is not available.

Highway and Observation Point	June 19, 1929 Wednesday	July 18, 1929 Thurs. day	Aug. 16, 1929 Friday
PACIFIC HIGHWAY			
North of Junction with County Road south of Oswego	3,323	3,366	3,372
On County Road at Junction south of Oswego	600	769	841
South of Junction with County Road south of Oswego	2,836	2,689	2,651
East Side River Road north of Oregon City	2,469	2,370	2,241
82d Street Road north of Oregon City	2,972	2,886	2,904
Parkplace Bridge north of Oregon City	4,877	4,711	4,564
North of Junction with County Road north of Aurora	2,526	2,660	2,755
On County Road at Junction with County Road north of Aurora	154	120	136
South of Junction with County Road north of Aurora	2,654	2,766	2,872
Santiam River Bridge at Jefferson	2,053	2,054	2,181
Harrisburg Bridge	1,544	1,631	1,935
North of Junction with West Side Highway at Junction City	1,666	1,772	1,747
South of Junction with West Side Highway at Junction City	3,142	3,529	3,478
North of Junction with Willamette Highway at Goshen	2,664	2,935	2,851
South of Junction with Willamette Highway at Goshen	2,391	2,441	2,342
Yoncalla	1,667	1,913	1,941
North of Junction with Coos Bay Highway at Winston	1,726	2,043	2,146
South of Junction with Coos Bay Highway at Winston	1,474	1,714	1,814
One mile south of Wolf Creek	1,302	1,462	1,388
North of Junction with Redwood Highway south of Grants Pass	3,755	3,831	4,303
South of Junction with Redwood Highway south of Grants Pass	1,907	2,012	2,127
One mile south of Medford	3,012	3,075	3,283
North of Junction with Green Springs Highway	1,332	1,323	1,365
South of Junction with Green Springs Highway	1,095	1,091	1,061
COLUMBIA RIVER HIGHWAY			
Clatsop-Columbia County Line	777	1,066	1,272
Columbia-Multnomah County Line	1,709	1,914	2,169
One mile west of Cascade Locks	1,786	1,987	2,115
West of Junction with Mt. Hood Highway near Hood River	2,566	2,596	2,681
East of Junction with Mt. Hood Highway near Hood River	1,628	1,711	1,850
Two miles west of The Dalles, Chenoweth Creek	1,518	1,721	1,707
West of Junction with The Dalles-California Highway near Seufert	1,920	2,097	2,262
East of Junction with The Dalles-California Highway near Seufert	1,397	1,470	1,510
West of Junction with Sherman Highway at Biggs	1,047	1,201	1,291
East of Junction with Sherman Highway at Biggs	1,027	1,136	1,218
West of Junction with John Day Highway at Arlington	1,196	1,461	1,472
East of Junction with John Day Highway at Arlington	896	1,065	1,091
West of Junction with Oregon-Washington Highway at Willow Creek	729	885	932
East of Junction with Oregon-Washington Highway at Willow Creek	675	806	879
Fifteen miles west of Pendleton	746	913	1,008
WEST SIDE PACIFIC HIGHWAY			
East of Junction with Tualatin Highway near St. Joseph	1,442	1,841	2,089
South of Junction with Tualatin Highway near St. Joseph	1,979	1,443	2,826
North of Junction with Tillamook Highway west of McMinnville	2,125	2,585	3,136
South of Junction with Tillamook Highway west of McMinnville	1,200	2,443	1,764
North of Junction with Salem-Dallas Highway at Rickreall	1,126	1,315	1,410
South of Junction with Salem-Dallas Highway at Rickreall	1,060	1,310	1,418
Luckiamute River at Helmick	926	1,190	1,332
One-half mile south of Mary's River Bridge at Corvallis	1,852	2,144	2,290
Intersection with Pacific Highway at Junction City	1,677	1,997	1,983

TABLE No. 46—Continued

Highway and Observation Point	June 19, 1929 Wednesday	July 18, 1929 Thursday	Aug. 16, 1929 Friday
THE DALLES-CALIFORNIA HIGHWAY			
Junction with Columbia River Highway near Seufert	595	694	805
Tygh Valley	350	414	363
North of Junction with Sherman Highway	199	255	239
South of Junction with Sherman Highway	251	333	341
One mile north of Madras	337	443	405
One-half mile north of Redmond	689	823	788
North of Junction with McKenzie-Bend Highway near Bend	620	697	818
South of Junction with McKenzie-Bend Highway near Bend	960	1,211	1,222
South limits of Bend	1,073	1,169	1,270
North of Junction with Fremont Highway south of Lapine	320	469	449
South of Junction with Fremont Highway south of Lapine	272	419	420
North of Junction with Crater Lake Highway near Fort Klamath	353	407	352
South of Junction with Crater Lake Highway near Fort Klamath	482	598	590
One mile north city limits of Klamath Falls	2,259	2,510	2,376
North of Junction with Lakeview Highway 5 miles south of Klamath Falls	941	1,434	867
South of Junction with Lakeview Highway 5 miles south of Klamath Falls	436	831	437
JOHN DAY HIGHWAY			
Junction with Columbia River Highway at Arlington	345	429	403
North limits of Condon	429	369	441
North limits of Fossil	271	306	244
One mile west of Spray	160	225	232
One mile east of Spray	183	218	209
North of Junction with Ochoco Highway near Dayville	124	95	140
South of Junction with Ochoco Highway near Dayville	172	145	205
West of Junction with Canyon City Road at John Day	420	446	544
On road to Canyon City at Junction	281	279	372
East of Junction with Canyon City Road at John Day	299	301	418
West of Junction with Austin Road	192	259	380
Austin Road at Junction	110	166	175
East of Junction with Austin Road	184	262	368
Jamieson	140	153	157
West of Cairo	431	440	440
OLD OREGON TRAIL			
Meacham	636	785	905
One mile east of La Grande	1,341	1,462	1,520
One mile south of Union	698	787	816
Five miles south of Haines (Wingville)	982	1,159	1,312
Weatherby	414	463	567
West of Junction with Road to Weiser north of Ontario	586	533	721
Weiser Road at Junction north of Ontario	571	593	704
East of Junction with Road to Weiser north of Ontario	605	590	749
Between Ontario and the Idaho Line	1,258	1,423	1,446
North of Cairo	768	764	804
South of Cairo	525	535	579
CENTRAL OREGON HIGHWAY			
One mile east of Bend	472	399	416
OREGON-WASHINGTON HIGHWAY			
Junction with Columbia River Highway at Willow Creek	75	92	88
West limits of Lexington	156	234	264
West of Junction with Pendleton-John Day Highway near Pilot Rock	93	70	175
East of Junction with Pendleton-John Day Highway near Pilot Rock	156	139	261
Seven miles north of Pendleton	1,008	1,114	1,010
0.5 miles north of Freewater	2,748	2,342	2,942

TABLE No. 46—Continued

Highway and Observation Point	June 19, 1929 Wednesday	July 18, 1929 Thurs. day	Aug. 16, 1929 Friday
ROOSEVELT COAST HIGHWAY			
East of Junction with Warrenton Road near Skipanon	1,269	1,417	1,773
On Warrenton Road north of Junction	499	487	561
South of Junction with Warrenton Road near Skipanon	1,631	1,729	2,121
North of Junction with Cannon Beach Road	630	954	1,284
On Cannon Beach Road at Junction	370	634	825
South of Junction with Cannon Beach Road	312	489	598
North of Junction with Miami Road	772	976	1,219
On Road to Miami	120	129	149
South of Junction with Miami Road	723	921	1,151
North of Junction with McMinnville Highway at Hebo	563	790	1,067
South of Junction with McMinnville Highway at Hebo	612	836	1,090
North of Salmon River Road at Otis	117	167	313
On Salmon River Road at Otis	44	108	163
South of Salmon River Road at Otis	147	291	396
Siletz River Bridge south of Taft	192	416	600
North of Agate Beach, 2.5 miles north of Newport	345	558	648
South of Agate Beach, 2.5 miles north of Newport	352	544	614
Yaquina Bay Ferry south of Newport	19	26	44
Ferry across Alsea Bay (Waldport)	8	19	15
Ferry between Florence and Glenada	6	22	24
Ferry between North Bend and Glasgow	411	497	531
Between Marshfield and Coquille at Coaledo	1,094	1,373	1,235
0.5 miles west of Riverton, Coquille-Bandon Section	795	811	838
Four miles south of Bandon	538	742	713
Hubbard Creek Bridge south of Port Orford	289	356	286
Ferry north of Gold Beach	234	298	290
Chetco River Bridge	332	449	428
WALLOWA LAKE HIGHWAY			
Alicel	558	530	666
Minam Hill, ten miles east of Elgin	246	238	248
3.5 miles east of Enterprise	536	724	854
McKENZIE HIGHWAY			
Thurston	734	794	835
Sparks Ranch, one mile west of Blue River	282	395	420
Lane-Deschutes County Line	118	211	223
West of Junction with Bend Highway near Sisters	253	411	375
East of Junction with Bend Highway near Sisters	112	152	131
McKENZIE-BEND HIGHWAY			
Junction with McKenzie Highway near Sisters	142	259	245
Junction with The Dalles-California Highway near Bend	325	540	384
WILLAMETTE HIGHWAY			
Junction with Pacific Highway at Goshen	469	601	678
BAKER-CORNUCOPIA HIGHWAY			
Two miles east of Baker	283	193	256
CROOKED RIVER HIGHWAY			
One-half mile south of Prineville	58	69	84
FREMONT HIGHWAY			
Junction with The Dalles-California Highway south of Lapine	76	60	42
North of Junction with Adel Market Road 5 miles north of Lakeview	222	269	261
On Adel Market Road at Junction	153	114	124
South of Junction with Adel Market Road 5 miles north of Lakeview	375	384	385
Four miles south of Lakeview	316	234	329
TUALATIN VALLEY HIGHWAY			
East of Junction with Bertha-Beaverton Highway	1,233	1,289	1,427
West of Junction with Bertha-Beaverton Highway	2,870	2,915	2,774
Junction with West Side Highway near St. Joseph	745	839	930
ALBANY-CORVALLIS HIGHWAY			
Granger, midway between Albany and Corvallis	1,008	1,115	1,073

TABLE No. 46—Continued

Highway and Observation Point	June 19, 1929 Wednesday	July 18, 1929 Thursday	Aug. 16, 1929 Friday
SALEM-DALLAS HIGHWAY			
West of Junction at Rickreall	779	874	823
East of Junction at Rickreall	1,158	1,302	1,220
McMINNVILLE-TILLAMOOK HIGHWAY			
Junction with West Side Highway near McMinnville	957	1,192	1,556
Junction with Roosevelt Coast Highway at Hebo	619	907	1,040
CORVALLIS-NEWPORT HIGHWAY			
East of Junction with Alsea Highway near Philomath	1,096	1,242	1,376
West of Junction with Alsea Highway near Philomath	682	805	878
Eddyville	272	385	466
East of Siletz Road 1.25 miles west of Toledo	437	521	646
On Siletz Road 1.25 miles west of Toledo	252	297	327
West of Siletz Road 1.25 miles west of Toledo	504	522	702
COOS BAY-ROSEBURG HIGHWAY			
Junction with Pacific Highway at Winston	364	547	592
East of Junction with Powers Road 2 miles east of Myrtle Point	596	660	662
On Powers Road at Junction	273	324	326
West of Junction with Powers Road 2 miles east of Myrtle Point	838	923	896
Halfway between Myrtle Point and Coquille	1,214	1,560	1,167
OREGON CAVES ROAD			
At Junction with Redwood Highway south of Kerby	211	347	319
OCHOCO HIGHWAY			
One mile east of Redmond	339	350	384
One mile west of Prineville	400	659	475
One mile east of Prineville	437	427	429
Summit in Ochoco National Forest	102	112	105
Junction with John Day Highway 4 miles north of Dayville	64	52	77
KLAMATH FALLS-LAKEVIEW HIGHWAY			
Junction with The Dalles-California Highway south of Klamath Falls	613	624	521
West of Junction with Yonna Valley Road 2 miles east of Dairy	354	412	318
On Yonna Valley Road at Junction	68	142	95
East of Junction with Yonna Valley Road 2 miles east of Dairy	290	276	233
Three miles west of Lakeview	340	353	369
GREEN SPRINGS HIGHWAY			
Junction with Pacific Highway south of Ashland	613	733	650
West of Junction with Dorris Road west of Keno	641	689	695
On Dorris Road at Junction west of Keno	80	94	87
East of Junction with Dorris Road west of Keno	711	771	738
CRATER LAKE HIGHWAY			
South of Eagle Point, 9.0 miles north of Medford	633	913	991
South of Junction with Derby Road at McLeod Bridge	73	210	252
On Derby Road at McLeod Bridge Junction	44	83	67
North of Junction with Derby Road at McLeod Bridge	88	250	237
At Junction with The Dalles-California Highway near Forth Klamath	279	463	460
REDWOOD HIGHWAY			
Junction with Pacific Highway south of Grants Pass	2,187	2,506	2,560
North of Junction with Oregon Caves Highway south of Kerby	608	925	989
South of Junction with Oregon Caves Highway south of Kerby	522	844	927
MT. HOOD HIGHWAY			
West of Forks of Road at east limits of Sandy	966	1,395	1,240
Bull Run Road at Junction at east limits of Sandy	108	136	73
East of Forks of Road at east limits of Sandy	888	1,292	1,217
Horse Thief Meadows	137	229	254
Junction with Columbia River Highway near Hood River	1,200	1,241	1,171

TABLE No. 46—Continued

Highway and Observation Point	June 19, 1929 Wednes-day	July 18, 1929 Thurs-day	Aug. 16, 1929 Friday
ALSEA HIGHWAY			
Junction with Corvallis-Newport Highway near Philomath	465	540	574
Schoolhouse at Alsea	332	373	394
PENDLETON-JOHN DAY HIGHWAY			
Junction with Oregon-Washington Highway near Pilot Rock	81	75	132
SHERMAN HIGHWAY			
Junction with Columbia River Highway at Biggs	231	261	277
One mile south of Moro	276	344	377
Junction with The Dalles-California Highway	78	108	130
ENTERPRISE-FLORA HIGHWAY			
Fourteen miles north of Enterprise	76	65	61
SIUSLAW HIGHWAY			
Greenleaf Creek, 3 miles east of Greenleaf	139	135	151
West of County Road, 1.5 miles west of Cheshire	302	341	359
On County Road 1.5 miles west of Cheshire	125	132	151
East of County Road 1.5 miles west of Cheshire	307	320	353
SANTIAM HIGHWAY			
West of Junction with Crabtree Road	698	738	756
On Crabtree Road at Junction	343	334	324
East of Junction with Crabtree Road	463	519	567
BAKER-UNITY HIGHWAY			
Dooley Mountain	143	150	157
UMPQUA HIGHWAY (COUNTY)			
Ferry at Scottsburg	149	193	211
BERTHA-BEAVERTON HIGHWAY			
Junction with Tualatin Valley Highway	1,742	1,709	1,431
Total vehicles counted	165,640	187,045	196,487

PERCENTAGE CLASSIFICATION OF VEHICLES COUNTED

	June 19, 1929 Wednes-day	July 18, 1929 Thurs. day	Aug. 16, 1929 Friday
Oregon registered passenger cars	63.60	60.35	61.01
Passenger cars from other states	24.25	27.91	25.98
Stages and busses	1.26	1.20	1.12
Trucks, 1.5 tons and under	6.48	6.07	6.84
Trucks, over 1.5 tons	3.88	3.97	4.47
Motorcycles	0.32	0.29	0.36
Horse-drawn vehicles	0.21	0.21	0.22
Totals	100.00	100.00	100.00

TABLE No. 47

COMPARISON OF 1929 TRAFFIC COUNT WITH COUNTS OF PREVIOUS YEARS

The numbers given in this table are the numbers of vehicles of all kinds passing the observation points listed, between the hours of 6 a. m. and 10 p. m. on the dates stated in the column headings. It will be noted that each count was taken on a Friday near the middle of the month of August.

Highway and Observation Point	Friday, Aug. 17, 1923	Friday, Aug. 14, 1925	Friday, Aug. 13, 1926	Friday, Aug. 12, 1927	Friday, Aug. 17, 1928	Friday, Aug. 16, 1929
PACIFIC HIGHWAY						
South of Junction with County Road south of Oswego	1,517	1,204	2,478	2,512	3,195	2,651
South of Junction with County Road north of Aurora	1,835	2,544	2,570	2,893	3,064	2,755
Santiam River Bridge at Jefferson	1,525	1,717	1,993	2,199	2,308	2,181
North of Junction with West Side Highway at Junction City	744	1,249	1,032	1,276	1,112	1,747
South of Junction with West Side Highway at Junction City	1,758	2,417	1,555	2,257	1,845	3,478
Yoncalla	1,048	1,562	1,597	1,572	1,567	1,941
One mile south of Wolf Creek	897	1,107	1,336	1,313	1,290	1,388
South of Junction with Redwood Highway south of Grants Pass	1,333	1,699	1,933	1,983	2,093	2,127
One mile south of Medford	2,308	3,665	3,906	3,513	3,753	3,283
South of Junction with Ashland-Klamath Falls Highway	718	1,078	1,101	1,191	1,143	1,061
COLUMBIA RIVER HIGHWAY						
Clatsop-Columbia County Line	1,003	1,063	1,133	1,210	1,281	1,272
Columbia-Multnomah County Line	2,145	1,575	1,632	1,807	1,910	2,169
One mile west of Cascade Locks	1,198	1,495	1,563	1,785	2,018	2,115
West of Junction with Sherman Highway at Biggs	539	862	971	1,060	1,229	1,291
East of Junction with John Day Highway at Arlington	723	852	909	908	1,037	1,472
Fifteen miles west of Pendleton	522	664	801	817	1,136	1,008
WEST SIDE PACIFIC HIGHWAY						
North of Junction with Tualatin Highway near St. Joseph	390	980	1,337	1,510	1,792	2,089
South of Junction with Tualatin Highway near St. Joseph	765	1,469	1,884	2,073	2,393	2,826
North of Junction with Tillamook Highway west of McMinnville	630	2,145	2,257	2,460	2,332	3,136
South of Junction with Tillamook Highway west of McMinnville	318	1,183	1,218	1,320	1,294	1,764
One-half mile south of Mary's River Bridge at Corvallis	1,006	1,887	1,490	1,724	2,234	2,290
Intersection with Pacific Highway at Junction City	1,062	1,390	868	1,179	1,191	1,983
THE DALLES-CALIFORNIA HIGHWAY						
Tygh Valley	103	171	288	300	321	363
One mile north of Madras	100	187	195	272	379	405
North of Junction with Crater Lake Highway near Fort Klamath	58	101	181	182	339	352
South of Junction with Crater Lake Highway near Fort Klamath	235	361	401	461	612	590
North of Junction with Lakeview Highway 5 miles south of Klamath Falls	521	764	878	1,017	1,282	867
South of Junction with Lakeview Highway 5 miles south of Klamath Falls	315	488	481	627	731	437
OLD OREGON TRAIL						
Meacham	324	555	619	650	784	905
One mile south of Union	382	572	641	686	803	816
Weatherby	273	350	417	414	534	567
West of Junction with road to Weiser north of Ontario	257	350	455	437	618	613
East of Junction with road to Weiser north of Ontario	263	413	642	834	673	749
Between Ontario and the Idaho Line	701	887	1,125	1,023	1,541	1,446
South of Cairo	375	352	422	466	457	579

TABLE No. 47—Continued

Highway and Observation Point	Friday, Aug. 17, 1923	Friday, Aug. 14, 1925	Friday, Aug. 13, 1926	Friday, Aug. 12, 1927	Friday, Aug. 17, 192	Friday, Aug. 16, 1929
JOHN DAY HIGHWAY						
North of limits of Condon	144	153	180	300	339	441
One mile west of Spray	31	73	116	137	215	232
South of Junction with Ochoco Highway near Dayville	37	64	106	123	230	205
Jamieson	114	73	81	113	136	157
ROOSEVELT COAST HIGHWAY						
South of Junction with Warrenton Road near Skipanon	1,377	1,542	1,683	1,790	1,998	2,121
North of Junction with McMinnville Highway at Hebo	501	621	638	932	792	1,067
South of Junction with McMinnville Highway at Hebo	426	555	630	820	709	1,090
Between Marshfield and Coquille at Coaledo	488	807	817	914	1,010	1,235
North of Gold Beach	82	154	174	210	230	290
WALLOWA LAKE HIGHWAY						
Minam Hill, 10 miles east of Elgin	125	163	191	219	182	248
McKENZIE HIGHWAY						
Thurston	269	470	537	571	748	835
West of Junction with Bend Highway near Sisters	101	210	409	359	377	375
TUALATIN VALLEY HIGHWAY						
West of Junction with Bertha-Beaverton Highway	2,279	2,626	2,657	2,387	3,348	2,774
Junction with West Side Highway near St. Joseph	556	667	804	777	878	930
McMINNVILLE-TILLAMOOK HIGHWAY						
Junction with West Side Highway near McMinnville	446	1,105	1,168	1,244	1,130	1,556
Junction with Roosevelt Coast Highway at Hebo	565	687	698	864	893	1,040
CORVALLIS-NEWPORT HIGHWAY						
Eddyville	260	296	362	430	465	466
COOS BAY-ROSEBURG HIGHWAY						
Junction with Pacific Highway at Winston	308	357	589	401	597	592
Halfway between Myrtle Point and Coquille	507	756	904	1,007	929	1,167
OCHOCO HIGHWAY						
One mile east of Prineville	243	231	273	324	346	429
Junction with John Day Highway 4 miles north of Dayville	14	18	35	60	66	77
KLAMATH FALLS-LAKEVIEW HIGHWAY						
Junction with The Dalles-California Highway south of Klamath Falls	215	313	349	440	637	521
Three miles west of Lakeview	152	222	280	316	315	369
GREEN SPRINGS HIGHWAY						
Junction with Pacific Highway south of Ashland	167	427	437	496	557	650
CRATER LAKE HIGHWAY						
North of Junction with Derby Road at McLeod Bridge	309	390	307	544	472	237
At Junction with The Dalles-California Highway near Fort Klamath	139	320	327	405	536	460
REDWOOD HIGHWAY						
Junction with Pacific Highway south of Grants Pass	737	967	903	1,024	1,685	2,560
North of Junction with Oregon Caves Highway south of Kerby	117	349	386	430	543	989
MT. HOOD HIGHWAY						
East of forks of road at east limits of Sandy	285	639	770	918	1,116	1,217
SHERMAN HIGHWAY						
Junction with Columbia River Highway at Biggs	119	177	222	245	263	277
One mile south of Moro	204	239	191	322	286	377
Total vehicles counted	39,208	55,029	59,533	65,053	72,319	79,700
Percentage of increase over 1923 count	....	40.38	51.84	65.81	84.45	103.27
Percentage of increase over preceding year	....	....	8.18	9.27	11.17	10.21

TABLE No. 48

VOLUME OF TRAVEL TO CRATER LAKE AND OREGON CAVES

As an index to the rate at which travel over the Crater Lake Highway and the Redwood Highway is increasing, the following tabulations of yearly registrations at Crater Lake National Park and at the Oregon Caves are given. The information pertaining to Crater Lake National Park was furnished by the United States National Park Service, and that pertaining to the Oregon Caves was furnished by the Grants Pass Chamber of Commerce.

CRATER LAKE NATIONAL PARK

Year	Cars Registered	Visitors Registered
1904	Not listed	1,400
1905	Not listed	1,400
1906	Not listed	1,800
1907	Not listed	2,600
1908	Not listed	5,275
1909	Not listed	5,000
1910	Not listed	5,000
1911	Not listed	4,500
1912	Not listed	5,235
1913	Not listed	6,235
1914	Not listed	7,096
1915	Not listed	11,371
1916	2,649	12,265
1917	2,756	11,645
1918	3,105	13,231
1919	4,637	16,645
1920	5,158	20,135
1921	7,892	28,617
1922	9,429	33,011
1923	15,377	52,017
1924	19,331	64,312
1925	19,551	65,018
1926	26,397	86,019
1927	25,667	82,354
1928	34,869	113,323
1929	38,105	128,435
1930	51,020	157,693

OREGON CAVES

Year	Number of Visitors
1922	10,000
1923	14,500
1924	16,500
1925	13,670
1926	20,950
1927	20,442
1928	24,815
1929	27,272
1930	26,400

LEFT—THE DALLES-CALIFORNIA HIGHWAY NEAR FT. KLAMATH; CENTER—SANTIAM HIGHWAY NEAR CASCADIA; RIGHT—WAPINITIA HIGHWAY NEAR FROG LAKE

PART FIVE

Description of Work

of the

State Highway Department

in the

Counties of the State

1929-1930

BAKER COUNTY

New highway construction in Baker county during the 1929-30 biennium, has been limited to five miles of grading and surfacing on the Baker-Cornucopia Highway between Halfway and Carson. This work was financed from Baker County Market Road funds. This section completes the grading of all state highways within the limits of the county with the exception of approximately six miles between Carson and Cornucopia, which section is in no immediate need of construction due to the cessation of mining activities, the sole industry of Cornucopia. On the highways which have been graded to state standards, there remain to be surfaced 27.0 miles on the Baker-Cornucopia Highway and 20.7 miles on the Baker-Unity Highway. The surfaced highways consist of 71.92 miles of oil-treated surface on the Old Oregon Trail, 23.10 miles of crushed rock or gravel surface on the John Day Highway, 24.05 miles of crushed rock surface on the Baker-Unity Highway and 40.77 miles of crushed rock or gravel surface on the Baker-Cornucopia Highway. These mileages do not include mileages within cities and towns, except where such mileages are maintained by the state.

Major improvements to existing highways include the regrading, resurfacing and draining of the Baker-Haines section of the Old Oregon Trail, the regrading and resurfacing of the Old Oregon Trail from Baker to Durkee, and the construction of a bituminous macadam wearing surface between Baker and Pleasant Valley on the Old Oregon Trail.

A state-owned patrol headquarters has been established at Baker during the biennium, a service building being constructed to furnish office quarters for the Resident Maintenance Engineer, and storage and shop space for maintenance equipment.

All highway work in Baker county during the biennium has been done under the supervision of H. G. Smith, Division Engineer, with headquarters at La Grande.

Unity-Hereford Surfacing

On the Baker-Unity Highway, from Sta. 84 which is about 2.0 miles northeast of Unity, to Sta. 834 which is approximately 3.7 miles east of Hereford; 14.5 miles of crushed rock surfacing, 16 feet wide and 8 inches in depth excepting approximately one mile through swampy ground which was constructed to depth of 14 inches by addition of 6 inches of sub-base material.

Contract No. 1,006, awarded October 25, 1927, to Joslin & McAllister, of Spokane, Washington. Work commenced June 1, 1928; completed October 11, 1928. Final cost, $72,339.57. Resident Engineer, W. C. Williams.

This work was completed in 1928, but was reopened to show delayed costs carried over into 1929.

Further details will be found on pages 224-225 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 2,978.67
Labor and materials furnished by the state:		
Lease of filler pit and stock pile site		30.00
Signs for traffic control		9.16
Prospecting for surfacing materals		15.25
Sprinkling surfacing materials		2,335.45
Supervision of construction and operation of non-segregating bunker		200.00
Credit for surfacing materials used on other projects Cr.		2,445.00
Contract items as follows:		
Sub-base course surfacing, 1,475.0 cu. yds. at $1.78	$ 2,625.50	
Base course surfacing, 17,660.0 cu. yds. at $1.78	31,434.80	
Top course surfacing, 13,128.0 cu. yds. at $1.78	23,367.84	
Maintenance materials, 2,884.8 cu. yds. at $1.35	3,894.48	
Additional maintenance materials, 1,500.0 cu. yds. at $1.00	1,500.00	
Truck haul, 5,250.0 yd. mi. at $0.18	945.00	
Earth filler, 4,896.0 cu. yds. at $0.20	979.20	
Filler haul, 8,002.0 yd. mi. at $0.20	1,600.40	
Stripping filler pit, 40.2 cu. yds.at $0.25	10.05	
Force account items:		
Construction of non-segregating bunker	270.55	
Drilling and shooting quarry at Sta. 246	657.60	
Construction of extra hauling road from quarry to highway	258.01	
Extra hauling made necessary by abandonment of quarry, Sta. 246	1,649.25	
Shooting filler pit where unable to plow	23.36	
Total amount paid to contractor		69,216.04
Grand total cost of project		$ 72,339.57

PARTICIPATION IN COSTS

	State	*County*	*Total*
Expended 1927-28 biennium	$ 22,216.69	$ 32,183.28	$ 54,399.97
Expended 1929-30 biennium	15,514.86	2,424.74	17,939.60
Total of expenditures	$ 37,731.55	$ 34,608.02	$ 72,339.57

Baker-Pleasant Valley Resurfacing

Federal Aid Project No. 66

On the Old Oregon Trail, from the southeast city limits of Baker to a point about one and one-half miles north of the town of Pleasant Valley; 9.41 miles of crushed rock resurfacing, 18 feet wide and compacted depth of 8 inches.

Contract No. 1062, awarded January 29, 1929, to Joslin & McAllister, of Spokane, Washington. Work commenced April 27, 1929; completed July 7, 1930. Final cost, $66,338.07, consisting of $58,426.87 from state funds and $7,911.20 from government funds. Resident Engineer, J. N. Bishop and W. W. Stiffler, successively.

Due to difficulty in crushing rock, the contractor was unable to complete his contract within the specified time. However, all resurfacing work was complete in October, 1929, so traffic was not inconvenienced during the winter. Stock-piling of maintenance materials was continued throughout the winter months and completed on July 7, 1930.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 4,541.40
Labor and materials furnished by state:		
Quarry, site survey, purchase, abstract and fence		329.88
Lease of stock pile sites		15.00
Preparing stock pile sites		86.60
Sprinkling surfacing materials		3,369.05
Signs for traffic control		22.52
Contract items as follows:		
Base course surfacing, 13,861 cu. yds. at $1.20	$ 16,633.20	
Top course surfacing, 5,094.5 cu. yds. at $1.20	6,113.40	
Grade "A" materials in trucks, 560 cu. yds. at $1.05	588.00	
Earth filler, 2,279 cu. yds. at 20c	455.80	
Hauling broken stone (truck measure) 57,104.25 yd. mi. at 18c	10,278.77	
Hauling filler, 5,728 cu. yd. mi. at 18c	1,031.04	
Grade "A" materials in stock piles, 1,195 cu. yds. at $1.18	1,410.10	
Grade "B" materials in stock piles, 1,755 cu. yds. at $1.18	2,070.90	
Grade "C" materials in stock piles, 2,646.3 cu. yds. at $1.18	3,122.63	
Grade "D" materials in stock piles, 5,687.5 cu. yds. at $1.18	6,711.25	
Hauling broken stone, pile measure, 21,214.7 yd. mi. at 18c	3,818.65	
⅛-inch dust material, pile measure, 557.7 cu. yds. at 75c	418.28	
Extra grade "A" materials, 1,100.7 cu. yds. at $3.00	3,302.10	
Extra grade "B" materials, 808.3 cu. yds. at $3.00	2,424.90	
Hauling extra materials, 2,228.75 yd. mi. at 18c	401.18	
Rejected grade "A" materials in stock pile, 485.6 cu. yds. at $1.18	570.65	
Rejected grade "B" materials in stock piles, 347.9 cu. yds. at $1.18	410.52	
Total amount earned by contractor	$ 59,761.37	
Less final estimate in process of payment	1,787.75	
Total amount paid to contractor		57,973.62
Grand total expended on project, 1929-30		$ 66,338.07

PARTICIPATION IN COSTS

State	$ 58,426.87
Government	7,911.20
Total	$ 66,338.07

Pleasant Valley-Durkee Regrading and Resurfacing

Federal Aid Project No. 66

On the Old Oregon Trail, from Sta. 598+98.9, which is about 10.0 miles east of the city of Baker, to Sta. 1199+62, which is approximately one-half mile west of the town of Durkee; 12.4 miles of regrading and resurfacing with crushed rock to width of 19 feet and depth of 8 to 10 inches with additional gravel shoulders 2½ feet wide and 6 inches in depth.

[BAKER]

Contract No. 1137, awarded December 12, 1929, to Quinn-Robbins Co., Inc., of Boise, Idaho. Work commenced January 8, 1930. Estimated cost, $185,000, consisting of $90,550.36 from state funds and $94,449.64 from government funds. A total of $126,244.72 has been expended to date from state funds. Resident Engineer, H. J. Miller.

The rapid increase in motor vehicle traffic since the original construction of this section in 1922, necessitated the widening and straightening of the section. The section is now completed with a minimum roadbed width of 26 feet. Changes in alignment have resulted in the elimination of many sharp and dangerous curves.

All regrading and resurfacing work was completed in September, the remaining work being the furnishing and stock-piling of maintenance material.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 9,524.38
Right-of-way purchase		970.91
Quarry site purchase		111.60
Stock pile site purchase		50.50
Sprinkling surfacing materials		4,098.83
Contract items as follows:		
Clearing and grubbing, all	$ 500.00	
Common excavation, 63,754.1 cu. yds. at 30c	19,126.23	
Solid rock excavation, 30,172.2 cu. yds. at 85c	25,646.37	
Overhaul, 89,318 yd. stas. at 4c	3,572.72	
Truck haul, 11,669 yd. mi. at 20c	2,333.80	
12-inch corrugated iron pipe, 288 lin. ft. at $1.20	345.60	
18-inch corrugated iron pipe, 662 lin. ft. at $1.65	1,092.30	
24-inch corrugated iron pipe, 236 lin. ft. at $2.50	590.00	
30-inch corrugated iron pipe, 32 lin. ft. at $4.00	128.00	
36-inch corrugated iron pipe, 36 lin. ft. at $4.60	165.60	
12-inch corrugated iron siphon pipe, 12 lin. ft. at $1.40	16.80	
18-inch corrugated iron siphon pipe, 70 lin. ft. at $1.85	129.50	
6-inch concrete pipe, 610 lin. ft. at 40c	244.00	
Salvaging and reinstalling pipe, 316 lin. ft. at 50c	158.00	
Salvaging and reinstalling pipe, 90 lin. ft. at 90c	81.00	
Class "A" concrete, 85,53 cu. yds. at $28.00	2,394.84	
Metal reinforcement, 6,321 lbs. at 8c	505.68	
Cement rubble masonry, 1.54 cu. yds. at $12.00	18.48	
Salvaging guard fence, 917 lin. ft. at 25c	229.25	
Salvaging surfacing material, 2,030.6 cu. yds. at $1.00	2,030.60	
Hauling surfacing material, 1,015 yd. mi. at 30c	304.50	
Base course resurfacing, 26,095 cu. yds. at $1.22	31,835.90	
Top course resurfacing, 6,005 cu. yds. at $1.22	7,326.10	
Hauling broken stone, 67,723 yd. mi. at 18c	12,190.14	
Rock shoulder materials, 3,215 cu. yds. at 40c	1,286.00	
Hauling shoulder material, 7,596 yd. mi. at 18c	1,366.20	
Earth filler, 6,160 cu. yds. at 30c	1,848.00	
Hauling filler, 12,371 yd. mi. at 18c	2,226.78	
Rock backfill, 160 cu. yds. at $3.00	480.00	
Grade "A" materials in stock piles, 575 cu. yds. at $1.22	701.50	
Grade "B" materials in stock piles, 875 cu. yds. at $1.22	1,067.50	
Grade "D" materials, 1,475 cu. yds. at $1.22	1,799.50	
Hauling broken stone, pile measure, 9,362 yd. mi. at 17c	1,591.54	
Total amount earned by contractor	$123,332.43	
Deduction for retained percentage	11,843.93	
Total amount paid to contractor		111,488.50
Grand total expended, all state funds, 1929-30		$126.244.72

PARTICIPATION IN COST

	State	*Government*	*Total*
Total of expenditures	$126.244.72	$	$126,244.72
Estimated cost to complete	Cr. 35,694.36	94,449.64	58,755.28
Estimated total cost	$ 90,550.36	$ 94,449.64	$185,000.00

Baker-Pleasant Valley Bituminous Macadam

Federal Aid Project No. 66

On the Old Oregon Trail, from the southeast city limits of Baker to a point about one and one-half miles northwest of Pleasant Valley; 9.41 miles of bituminous macadam wearing surface, B-7 specification, 18 feet in width and 2½ inches in depth.

Contract No. 1217, awarded July 24, 1930, to J. C. Compton, of McMinnville, Oregon. Work commenced August 11, 1930; completed September 19, 1930. Estimated cost, $45,000, consisting of $20,100 from state funds and $24,900 from government funds. Expenditures to date consist of $34,887.07 from state funds. Resident engineer, W. W. Stiffler.

This section was originally included in the La Grande Bituminous Macadam Project upon which all bids were rejected as being in excess of the engineer's estimate. J. C. Compton, who was low bidder on the project, later agreed to construct the Baker-Pleasant Valley Section at a cost comparable with the engineer's estimate. The contract was awarded on this basis and rapidly completed by the contractor.

A preliminary base oil treatment was applied to this section in 1929 by state forces at a cost of $9,641.93, which amount is not included in the above costs.

Haines-Baker Regrading and Resurfacing

On the Old Oregon Trail, from Sta. 2+50 which station is at the north limit of the town of Haines, to Sta. 314+50 which station is about four miles north of the city of Baker; 5.70 miles of regrading and resurfacing, resurface to consist of a foundation course of pit run gravel 26 feet wide and from 18 to 24 inches in depth, with a top course of crushed gravel 20 feet wide and 2 inches in depth.

Contract No. 1218, awarded August 28, 1930, to Joslin & McAllister, of Spokane, Washington. Work commenced September 15, 1930. Estimated cost, $86,000, from state funds. Expenditures to date, $600. Resident Engineer W. W. Stiffler.

For many years throughout the northern part of the United States the annual spring "break-up" was regarded as more or less of a necessary evil. The addition of more road metal, or even of pavement, with ordinary drainage, has had little effect in permanently curing the frost boils. Nevertheless the increase in heavy busses and trucks running on a schedule, has made it very essential that a solution be found which would avoid the necessity of load limits during the dangerous period and permit their operation without damage to the highway.

The scientists of the Bureau of Public Roads, have found that the freezing of the ordinary ground water in the soil does not materially heave the road. It is only where fine capillary moisture is present, which continually rises through the ground and condenses and freezes beneath the surface of the road, that the ice cakes are formed which cause serious heaving during the winter, and "frost boils" during the spring thawing.

Following the conclusion developed by these researches, and combining them with methods found satisfactory in other localities in the state, it was decided to stabilize 5.7 miles of the Haines-Baker Section. Over a portion of the work the stabilization will consist of a 6-inch perforated concrete drain tile placed in trenches longitudinally along the center of the highway and below the frost line, with lateral drains to carry the drainage water to the surface ditches alongside the highway. The pipe will be back-filled over with coarse clean gravel to the entire depth of the drain. This drain, in addition to lowering the excess water ordinarily in the soil, will permit the water from the thawing ice to drain away through the coarse gravel backfill and perforated pipe. At present since the ice thaws from the top down, the water is entrapped and saturates the soil until a quagmire is formed by the impact of the traffic.

Realizing that an unusually severe frost condition exists due to the extreme capillarity of the alkaline soil, the second section is to be further stabilized by the addition of an 18-inch layer of coarse gravel placed on top of the existing roadbed. The oiled surface of the existing roadbed will be left intact as much as possible to cut off the capillary water from rising into the gravel.

The third section will be stabilized by a two-foot layer of coarse gravel without the construction of any center drain. Since the slope of this section was hardly suitable to dispose of the water from center drains, it was thought to be an excellent opportunity to test the efficacy of the gravel fill without the use of this drain. It is quite certain that the stabilizing scheme having both center drain and gravel fill will be very effective, and the project has been arranged so that corrections can be made in either of the two other schemes, if found advisable, when the balance of the project is built next year.

Haines-North Drainage Ditch

On the Old Oregon Trail, from Mile Point 325.55 which point is about one-half mile north of the town of Haines, north to Mile Point 324.64; thence in a northeasterly direction for a distance of about 1,000 feet to an outlet into the Powder River; 1.06 miles of drainage ditch.

Contract No. 1,113, awarded August 29, 1929, to Morrison-Knudsen, of Boise, Idaho. Work commenced September 15, 1929; completed November 14, 1929. Final cost, $18,199.85, from state funds. Resident Engineer, J. N. Bishop.

Owing to the capillarity of the soil which causes serious damage to the highway as a result of frost action along this section, this drainage ditch, approximately 8 feet in depth, was constructed parallel with the highway for a distance of approximately 0.9 mile. An outlet ditch was constructed into the Powder River about 1,000 feet northeast of the highway.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,330.57
Purchase of extra right-of-way		486.50
Fencing right-of-way		936.79
Contract items as follows:		
Excavation, single classification 17,889.2 cu. yds. at $0.40	$ 7,155.68	
Overhaul, 41,508.6 yd. sta. at $0.04	1,660.34	
Class "A" concrete, 54.83 cu. yds. at $29.00	1,590.07	
Metal reinforcement, 2,748 lbs. at $0.10	274.80	
Structural steel, 3,594 lbs. at $0.15	539.10	
No. 42 Lennon type flume, 112 lin. ft. at $2.25	252.00	
No. 60, Lennon type flume, 40 lin. ft. at $2.50	100.00	
No. 96, Lennon type flume, 18 lin. ft. at $5.00	90.00	
12-inch concrete pipe, 24 lin. ft. at $2.00	48.00	
18-inch concrete pipe, 128 lin. ft. at $2.75	352.00	
36-inch concrete pipe, 64 lin. ft. at $5.50	352.00	
36-inch corrugated iron pipe in culvert, 10 lin. ft. at $5.00	50.00	
36-inch corrugated iron pipe in ditch, 466 lin. ft. at $5.00	2,330.00	
36-inch corrugated iron pipe in tunnel, 24 lin. ft. at $10.00	240.00	
36-inch corrugated iron pipe in siphon, 70 lin. ft. at $5.60	392.00	
Salvaging siphon pipe (lump sum)	20.00	
Total amount paid contractor		15,445.99
Grand total cost of project, all state funds, 1929-30		$ 18,199.85

Quartz Station Revision Grading

Federal Aid Project No. 66

On the Old Oregon Trail, from Sta. 272+00 which station is approximately 6.0 miles southeast of Baker, to Sta. 315+00; 0.81 mile of grading.

Contract No. 1,070, awarded March 8, 1929, to Quinn Bros. & Robbins, of Boise, Idaho. Work commenced March 21, 1929; completed June 13, 1929. Final cost, $16,890.88, consisting of $7,506.29 from state funds and $9,384.59 from government funds. Resident Engineer, J. N. Bishop.

The grading of this short section eliminated several sharp curves which, owing to the rapid increase in motor vehicle traffic, were dangerous and difficult to negotiate.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 836.87
Purchase of extra right-of-way		625.00
Fencing quarry site and right-of-way		124.63
Contract items as follows:		
Clearing and grubbing, lump sum	$ 25.00	
Excavation, single classification, 24,143.4 cu. yds. at $0.35	8,450.19	
Overhaul, 77,989.0 yd. sta. at $0.04	3,119.56	
18-inch corrugated iron pipe, 210.0 lin. ft. at $3.00	630.00	
Class "A" concrete, 71.69 cu. yds. at $25.00	1,792.25	
Metal reinforcement, 7,321.0 lbs. at $0.08	585.68	
Salvaging surfacing materials, 431.8 cu. yds. at $1.50	647.70	
Salvaging and reinstalling pipe, 36.0 lin. ft. at $1.50	54.00	
Total amount paid to contractor		15,304.38
Total cost of project, 1929-30		$ 16,890.88

PARTICIPATION IN COST

State	$ 7,506.29
Government	9,384.59
Total of expenditures	$ 16,890.88

Baker-Pleasant Valley Widening

On the Old Oregon Trail, from the southeast city limits of Baker, Oregon, to a point about one and one-half miles north of the town of Pleasant Valley; 8.6 miles of roadbed widening and ditching. Roadbed widened to minimum width of 26 feet. Work commenced June 22, 1929; completed November 9, 1929. Final cost, $17,608.37 from state funds. Resident Engineer, J. N. Bishop.

Subsequent to the resurfacing of this section it was deemed advisable to widen the roadbed and construct new side drain ditches to properly take care of surface water. The work was done by state forces using a small power shovel and Ford trucks. E. E. Kretschmer, Mike Reedy and Robert V. Nelson successively were foremen in charge under the direction of J. N. Bishop, Resident Maintenance Engineer at Baker.

Alder Creek Bridge

Federal Aid Project No. 66

On the Old Oregon Trail, near Durkee, 43-foot, 4-inch concrete span, 24-foot roadway, on existing abutments.

Contract No. 1,076, awarded March 8, 1929, to R. F. Nichol, of Vale, Oregon. Work commenced April 1, 1929; completed July 31, 1929. Final cost, $5,997.96. Resident Engineer, M. Stephenson.

This bridge replaces a light, narrow steel span built by Baker County before the highway system was organized. The existing abutments were used with some reinforcement and with the addition of wing walls.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 651,23
Bronze name plates furnished by state		26.14
Grading approaches		58.70
Contract items as follows:		
Excavation, 68.8 cu. yds. at $1.25	$ 86.00	
Class "A" concrete, 91.35 cu. yds. at $22.00	2,009.70	
Class "D" concrete, 32.78 cu. yds. at $23.00	753.94	
Metal reinforcement, 21,558.5 lbs. at $0.08	1,724.68	
Removal of old bridge and maintenance of traffic, lump sum	200.00	
Concrete handrail, 97.77 lin. ft. at $4.50	439.97	
Removing concrete columns in front of old abutments	23.56	
Cement adjustment 6.55 bbls. at $3.67	24.04	
Total amount paid to contractor		5,261.89
Grand total cost of structure, 1929-30		$ 5,997.96

PARTICIPATION IN COST

	State	*Government*	*Total*
Expended to date	$ 2,765.11	$ 3,232.85	$ 5,997.96
Estimated cost to complete	Cr. 367.15	367.15	
Estimated total cost	$ 2,397.96	$ 3,600.00	$ 5,997.96

North Powder River Bridge

Federal Aid Project No. 154-A

The Old Oregon Trail, between Baker and Union Counties at North Powder; 54-foot steel truss, concrete deck set on concrete columns, 24-foot roadway.

Contract No. 1,087, awarded March 29, 1929, to R. K. Krausse, of Portland, Oregon. Work commenced April 29, 1929; completed September 20, 1929. Final cost, $8,376.58. Resident Engineer, M. Stephenson.

This bridge replaced a light steel structure at the county line between Baker and Union Counties. The existing abutments were used with the addition of wing walls.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 864.09
Bronze name plates furnished by state		29.27
Contract items:		
Excavation, 85.43 cu. yds. at $4.00	$ 341.72	
Excavation below elevation shown, 0.26 cu. yds. at $4.50	1.17	
Class "A" concrete, 38.58 cu. yds. at $21.00	810.18	
Class "D" concrete, 38.61 cu. yds. at $22.00	849.42	
Metal reinforcement, 8,840 lbs. at $0.05	530.40	
Structural steel, 60,561 lbs. at $0.07½	4,542.08	
Removal of old bridge and maintenance of traffic, lump sum	425.00	
Force account items:		
Cut down bridge seats on old abutments to clear bottom end of floor beams	15.90	
Extend top of wing of old abutment to connect with end of new curb	2.06	
Total amount earned by contractor	$ 7,517.93	
Deduction for cement adjustment 9.75 bbls. at $3.56	34.71	
Total amount paid contractor		7,483.22
Grand total cost of structure, 1929-30		$ 8,376.58

PARTICIPATION IN COST

State	$ 3,490.81
Government	4,885.77
Total of expenditures	$ 8,376.58

Storage Building at Baker

On the Old Oregon Trail at Baker; 28 by 152-foot standard frame maintenance storage building.

Contract No. 1,221, awarded August 28, 1930, to R. H. Jones, of Baker, Oregon. Work commenced September 23, 1930. Estimated cost, $7,000, from state funds. Expenditures to date have amounted to $600, being the cost of the tract of land only. Resident Engineer, M. Stephenson.

The need of a service building at Baker to provide office space for the resident maintenance engineer and storage space for maintenance equipment has been evident for some time. During the 1929-1930 biennium a tract of land of approximately one acre in area was purchased in the Zeller addition to Baker. This tract is situated adjacent to the Old Oregon Trail in east Baker. Negotiations for the purchase were handled by Resident Maintenance Engineers J. N. Bishop and W. W. Stiffler successively.

Maintenance

A total of 202.93 miles of state highways is under maintenance in Baker County at the close of this biennium, this mileage consisting of 67.58 miles of oil-treated macadam, 87.92 miles of untreated macadam, and 47.75 miles of graded roadbed.

Maintenance of the state highways is in direct charge of patrolmen stationed at strategic points, who are assigned sections approximating an average length of 30 miles. The patrolman is assisted by a helper and also employs additional men if necessity requires it. Patrol headquarters for the maintenance of Baker County highways are established at Baker, Keating, Richland, Weatherby, Austin, Hereford, Ironside, Union and the Snake River Patrol House.

All highways in Baker County are maintained as all-year roads. Extensive snow removal operations are required on the John Day and Baker-Unity Highways due to the high elevations attained in the mountainous country traversed by these highways. While very heavy snow falls are common on the Old Oregon Trail and Baker-Cornucopia Highways, snow removal has not proven difficult as truck plows are started to work simultaneously with the beginning of a snowstorm, and thus prevent the accumulation of deep snow on the highway. Snow fences are erected and maintained at all points along the highway which are subject to snow-drifts, and these fences very materially decrease the work of snow removal.

Prior to March 1, 1930, all maintenance work in Baker County was under the supervision of J. N. Bishop, Resident Maintenance Engineer located at Baker. From March 1, 1930, to the close of the biennium all the work has been done under the supervision of Resident Maintenance Engineer W. W. Stiffler located at Baker, with the exception of that portion of the Old Oregon Trail between North Powder and Haines, which has been under the supervision of W. C. Williams, Resident Maintenance Engineer at La Grande.

General maintenance expenditures during the biennium have amounted to $155,471.04 and expenditures for minor betterments, $6,314.76.

Dooley Mountain Park

On the Baker-Unity Highway, about 14 miles south of Baker.

This small park, containing a spring of clear, cold water and a dense stand of pine timber, was purchased from Ernest Hebestreit and wife in 1929. It is situated at an elevation of approximately 4,900 feet, about two miles north of the summit of Dooley Mountain on the Baker-Unity Highway, and is a highly favored spot by the traveling public.

The park has been developed by the construction of a drinking fountain, stone fireplace and tables and benches. Negotiations for the park were handled by Resident Maintenance Engineer J. N. Bishop. Expenditures to date have amounted to $510.

Storzback Timber Tract

On the John Day Highway, about 7 miles east of Unity.

The only green timber encountered on the John Day Highway between Vale and the Whitman National Forest west of Unity, is a small tract of pine timber lying along East Camp Creek about seven miles east of Unity. To preserve this isolated stand of timber the tract containing 60.27 acres was purchased from Elsie Storzback in October, 1928. A good spring, which can be developed when considered necessary, is available on the tract. Negotiations for the tract were handled by Division Engineer H. G. Smith. Expenditures during the biennium have amounted to $80.38.

Unity-Hereford Extra Right of Way

On the Baker-Unity Highway between Unity and Hereford.

In order to erect snow fences at several intermittent points along this section where severe snow-drifts occur, additional right of way was purchased. The value of the land was not high and it has proven more economical to purchase right of way and erect a semi-permanent type of snow fence than to maintain a temporary fence during each snow season. Negotiations for the purchase were handled by Resident Maintenance Engineer J. N. Bishop. Expenditures during the biennium have amounted to $264.80, from state funds.

Pleasant Valley-Durkee Survey

This survey was made preliminary to the regrading and resurfacing of the Pleasant Valley-Durkee section. It was found possible to materially improve the old alignment and a saving of about 0.16 mile in distance was effected.

Durkee-Malheur County Line Survey

The major portion of this section follows Burnt River Canyon and the roadbed as originally constructed in 1921 is narrow with numerous sharp curves. Preliminary to widening and straightening this section, a betterment survey is being made by Resident Engineer J. B. Weaver. The work which was begun in June, 1930, is expected to be completed in the early spring of 1931.

Halfway-Carson Construction Engineering

During 1929 and 1930 the section of the Baker-Cornucopia Highway from Halfway to Carson was graded and surfaced under a contract let by the Baker County Court. Engineer E. G. Bickmore was furnished by the State Highway Commission to supervise the construction. The total engineering expenditures on this project during the biennium have amounted to $3,481.79, from state funds. Further details in connection with this project may be found in the Market Road portion of this report under Baker County.

BENTON COUNTY

The State Highway System in Benton County was completed during the previous biennium. During the past two years several sections of the Newport and Alsea Highways have been resurfaced with macadam and given a bituminous macadam, or oil surface treatment, so that now all the highways in the county are paved or treated with asphalt except two short sections, both of which will be so treated early in the summer of 1931.

A convenient building for maintenance headquarters was built at Corvallis.

State highway work in Benton County has been under the supervision of J. S. Sawyer and E. A. Collier, successive Division Engineers, with headquarters at Salem.

Blodgett-Gellatly Point Bituminous Macadam

On the Corvallis-Newport Highway, from a point about 0.3 mile east of Gellatly Creek to a point 1.5 miles west of Gellatly Creek; 1.5 miles of bituminous macadam 1½ inches thick and 18 feet wide. Work performed by state oiling crew under Foreman E. M. Nash during August, 1930. Final cost, $7,364.68, from state funds. Resident Engineer, I. A. DeFrance.

Missouri-Bend Section Bituminous Macadam

On the Alsea Highway, from the Benton County line, Mile Point 28.24 to Mile Point 36.35, which point is approximately 4.25 miles west of the town of Alsea; 4.92 miles of oil surface treatment and 3.19 miles of bituminous macadam, 18 feet wide and 1½ inches thick. Work performed by state oiling crew under Foreman E. M. Nash during August, 1930. Estimated cost, $18,400, from state funds. Expenditures to date have amounted to $6,879.39. Resident Engineer, I. A. DeFrance.

Missouri-Bend Section, Surfacing

This project was completed during 1925 and a descriptive article will be found on page 215 of the 1925-26 report and on page 231 of the 1927-28 report. The project was opened during the present biennium only to record the receipt of $5,000 from Lincoln County, which completes their cooperation in the cost.

The final cost of the project amounted to $51,905.06, of which $34,540.35 was expended from state funds and $17,364.71 from county funds.

Alsea Mountain-Philomath Surfacing

On the Alsea Highway, from Sta. 1641+43, which station is at the west end of the bridge over Mary's River (about one-half mile west of the town of Philomath) west to Sta. 1003+00, which station is about six and one-half miles east of the town of Alsea; 6.16 miles of broken stone surfacing 16 feet in width, consisting of a course of 3-inch subbase 6 inches thick, a course of 1½-inch base 4 inches thick, and a 1-inch top course 1 inch thick. 5.88 miles of resurfacing 16 feet wide, consisting of a 1½-inch base course 4 inches thick and 1-inch top course 2 inches thick.

Contract No. 1,028, awarded January 26, 1928, to H. G. Johnson, of Portland, Oregon. Work commenced April 6, 1928; completed October 20, 1928. Final cost, $44,749.21. Resident Engineer, Carl A. Peterson.

All work was completed prior to the past biennium on this project and it has been opened only to record the payment of minor deferred costs.

Further details will be found on page 234 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 2,279.54
Purchase of quarry sites		457.00
Laying tile drains and extending culverts		132.60
Prospecting for surfacing materials		1,177.44
Sprinkling surfacing materials		1,066.28
Placing rip rap		115.53
Signs for traffic control		15.54
Contract items as follows:		
Sub-base course surfacing, 9,723.0 cu. yds. at $1.85	$ 17,987.55	
Base course surfacing, 6,521.0 cu. yds. at $1.85	12,063.85	
Top course surfacing, 1,669.0 cu. yds. at $2.00	3,338.00	
Base course maintenance materials, 472.94 cu. yds. at $1.40	662.12	
Top course maintenance materials, 1,968.95 cu. yds. at $1.50	2,953.40	
Hauling maintenance materials, 1,521.99 yd. mi. at 18c	273.96	
Earth filler, 2,960.0 cu. yds. at 40c	1,184.00	
Filler haul, 5,212.0 yd. mi. at 20c	1,042.40	
Total amount paid to contractor		39,505.28
Grand total cost of project		$ 44,749.21

PARTICIPATION IN COST

	State	County	Total
Expended 1927-28 biennium	$ 31,530.55	$ 13,168.43	$ 44,698.98
Expended 1929-30 biennium	Cr. 937.90	988.13	50.23
Total of expenditures	$ 30,592.65	$ 14,156.56	$ 44,749.21

Polk County Line-Corvallis Non-Skid Treatment

On the West Side Pacific Highway from the Polk County line to the north city limits of Corvallis; 9.2 miles of non-skid surface treatment. Work performed by state crew under Foreman O. C. Yocum during August, 1930. Estimated cost, $8,500, from state funds. Expended to date, $2,634.25. Resident Engineer, I. A. DeFrance.

The rock for this project was stockpiled under a separate contract. A total of only 5.29 miles was completed in 1930, due to the slow rate of progress in the production of stockpiled material.

Unit No. 3, Willamette Valley Rock Production Project

On the West Side Pacific Highway at Corvallis, Lewisburg, and Mile Post 77.5; delivering and stockpiling crushed rock for non-skid treatment of bituminous concrete pavement.

Contract No. 1,178, awarded March 27, 1930, to J. H. Gallagher, of Portland, Oregon. Work commenced April 5, 1930. Estimated cost, $7,400, from state funds. Expenditures to date, $4,229.30. Resident Engineer, I. A. DeFrance.

The production of this rock which is for use in non-skid construction on the West Side Pacific Highway from Corvallis north to the Polk County line has been very slow. It will probably be finished late in 1930, but the slow production has permitted the construction of only one-half of the non-skid work on this section which was contemplated to be completed during 1930.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 301.63
Labor and materials furnished by state:		
Lease on and preparing stock pile site		14.20
Construction signs		6.54
Contract items as follows:		
1¼-inch—¾-inch materials in stock piles, 1,349.1 cu. yds. at $2.13	$ 2,873.58	
¾-inch—¼-inch materials in stock piles, 619.67 cu. yds. at $2.13	1,319.90	
Hauling crushed gravel, 985.39 yd. mi. at 20c	196.88	
Total amount earned by contractor	4,390.36	
Deduction for retained percentage	483.43	
Total amount paid to contractor		3,906.93
Grand total expended, all state funds, 1929-30		$ 4,229.30

Maintenance

The State Highway System in this county comprises a total of 91.69 miles, of which 22.47 miles are bituminous pavement, 18.25 miles concrete pavement, 8.7 miles bituminous macadam, 38.27 miles oiled macadam, and 4 miles untreated macadam.

General maintenance of all state highways in Benton County has been under the direction of A. A. Amort and I. A. DeFrance, successive Resident Engineers with headquarters at Corvallis.

In addition to routine work, a large number of dangerous snags and trees have been cut, and snow removed from all highways after storms.

Eighteen and six-tenths miles of untreated macadam were oiled and 23.8 miles of oiled macadam were reoiled. For betterment work, a widening job on Alsea Mountain was done with a small power shovel, and five miles of non-skid treatment were placed on the pavement north of Corvallis. It is planned to complete the non-skid treatment on all bituminous concrete pavement in Benton County next summer.

Total expenditures for general maintenance in Benton County during the biennium have amounted to $106,670.84 and the amount expended for minor betterment work has been $8,790.37.

Alsea-Lincoln County Line Resurfacing

On the Alsea Highway, from Mile Point 36.35, which mile point is approximately 8.11 miles east of the Lincoln-Benton County line and 4.14 miles west of the town of Alsea, to Mile Point 40.49, which mile point is in the town of Alsea; 4.14 miles of broken stone resurfacing.

Contract No. 1,138, awarded December 12, 1929, to Joplin & Eldon, of Portland, Oregon. Work commenced March 10, 1930. Estimated cost, $38,000, from state funds. Expenditures to date are $27,989.77. Resident Engineer, I. A. DeFrance.

The work being done on this project consists of the resurfacing of a 4.14-mile section with broken stone 16 feet in width and 6 inches in depth. In addition to the resurfacing work, 7,000 cubic yards of maintenance materials are being delivered in stockpiles for future oiling work on the section extending from the Lincoln County line at Mile Point 28.24 to Mile Point 47.0, which point is at the foot of Alsea Mountain. The rock being produced on this project is being taken from the Seeley quarry which is located adjacent to the highway at a point about two miles west of Alsea.

It is contemplated the work will be completed by November 1, 1930.

Missouri-Bend Maintenance Materials

On the Alsea Highway, from Mile Point 28.24, which mile point is at the county line between Benton and Lincoln Counties, to Mile Point 36.35, which mile point is approximately 4 miles west of the town of Alsea; 8.11 miles of furnishing maintenance materials; 4,987 cubic yards placed on road and 3,041 cubic yards stockpiled.

Contract No. 1,063, awarded January 29, 1929, to Meyers and Company, of Portland, Oregon. Work commenced March 11, 1929; completed July 18, 1929. Final cost, $16,182.20. Resident Engineer, A. A. Amort.

In preparation for oiling, this section was lightly resurfaced with crushed gravel from the Alsea River. It was planned to finish this resurfacing early in the spring of 1929 to insure sufficient moisture from spring rains to properly bind the materials and thus permit the oiling to be done during that year. However, the project was not completed until the dry summer season and the surfacing did not set up, which made it necessary to defer the contemplated oiling work until the following year.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,040.46
Widening roadbed		88.75
Constructing surfacing		1,452.42
Sprinkling surfacing materials		463.00
Filler material		478.66
Preparing stock pile site		7.20
Contract items:		
Crushed gravel on road, 4,987 cu. yds. at $1.68	$ 8,378.16	
Crushed gravel in stock piles, 1,642 cu. yds. at $1.68	2,758.56	
Additional crushed gravel, 1,399 cu. yds. at $0.95	1,329.05	
Additional crushed gravel haul, 1,399 yd. mi. at $0.18	251.82	
Total amount earned by contractor	$ 12,717.59	
Deductions for haul adjustment	65.88	
Total amount paid contractor		12,651.71
Grand total cost of project, all state funds, 1929-30		$ 16,182.20

[BENTON]

Corvallis-Kline's Mill Resurfacing

On the Corvallis-Newport Highway, from Mile Point 31.6 at Kline's Mill east to Mile Point 48.5, about 3 miles west of Philomath, which is the west unit. The east unit extends from Mile Point 48.5 to Mile Point 56.7, which mile point is at the west corporate limits of the city of Corvallis; 8.0 miles of resurfacing, and furnishing crushed gravel for maintenance purposes. Work on the west unit consisted of the construction of 4.5 miles of resurfacing 18 feet wide and 5 inches deep, and the furnishing of 1,700 cubic yards of crushed gravel maintenance materials. Work on the east unit consisted of the construction of 3.5 miles of resurfacing 18 feet wide and 9 inches deep, and the furnishing of 1,100 cubic yards of crushed gravel maintenance materials.

Contract No. 1,082, awarded March 29, 1929, to J. H. Gallagher, of Portland, Oregon. Work commenced May 13, 1929; completed July 27, 1929. Final cost, $52,062.18. Resident Engineer, A. A. Amort.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,303.49
Labor and materials furnished by the state:		
Freight on gravel		4,727.43
Extending culverts		147.30
Maintaining completed roadbed		506.45
Widening roadbed		2,403.82
Constructing surfacing		224.53
Sprinkling surfacing materials		3,559.56
Filler material		862.82
Preparing stock pile sites		27.67
Signs for control of traffic		21.83
Building up shoulders		220.50
Contract items as follows:		
West Unit:		
Crushed gravel resurfacing in place, 6,872 cu. yds. at $3.17	$ 21,784.24	
Maintenance materials, 1,962 cu. yds. at $1.97	3,865.14	
Hauling maintenance materials, 4,356.75 yd. mi. at $0.22	958.49	
Additional maintenance materials, 527.25 cu. yds. at $1.97	1,038.68	
Earth filler, 1,587 cu. yds. at $0.50	793.50	
Filler haul, 1,115 cu. yds. at $0.20	223.00	
East Unit:		
Crushed gravel resurfacing in place, 8,824 cu. yds. at $1.60	14,118.40	
Maintenance materials, 1,221 cu. yds. at $1.20	1,465.20	
Hauling maintenance materials, 4,158 yd. mi. at $0.17	706.86	
Earth filler, 966 cu. yds. at $0.50	483.00	
Filler haul, 997.5 yd. mi. at $0.20	199.50	
Force account item:		
Building up shoulders	196.97	
Total amount earned by contractor	$ 45,832.98	
Deductions:		
Reduction for award of both units	500.00	
Freight on gravel, 8,754.5 cu. yds. at $0.67½	5,909.29	
Royalty on gravel, 12,850 cu. yds. at $0.10	1,285.00	
Freight differential on maintenance materials hauled in trucks, 606.75 cu. yds. at $0.13½	81.91	
Total amount paid to contractor		38,056.78
Grand total cost of project, all state funds, 1929-30		$ 52,062.18

East Unit, Eddyville-Blodgett Resurfacing

On the Corvallis-Newport Highway, from Sta. 1365 at a point known as Kline's Mill 4.83 miles west of Lincoln-Benton County line to Sta. 835 at Blodgett, 5.17 miles east of the Lincoln-Benton County line; 10.0 miles of resurfacing.

Contract No. 913, awarded August 26, 1926, to B. C. Seydel Company, assigned to Seydel-Hammel Company, of Portland, Oregon. Work commenced September, 1926; completed April 16, 1928. Final cost, $61,616.95. Resident Engineer, A. A. Amort.

Further details will be found on page 235 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,542.49
Labor and materials furnished by state:		
Royalties on surfacing materials		2,324.65
Removing slides and cleaning ditches		121.86
Hauling and processing surfacing materials		4,777.80
Sprinkling surfacing materials		947.43
Preparing stock pile sites		79.30
Signs for traffic control		10.90
Maintaining completed portions of roadbed		253.87
Equipment rental deducted from contractor's estimate		20.00
Contract items as follows:		
Base course broken stone, 3,137.0 cu. yds. at $2.54	$ 7,967.98	
Top course broken stone, 13,248.0 cu. yds. at $2.54	33,649.92	
Broken stone maintenance materials, 4,108.0 cu. yds at $2.54	10,434.32	
Force account: clearing and developing state-owned quarry	3,303.38	
Total amount earned by contractor	$ 55,355.60	
Deductions:		
Maintenance materials haul adjustment	3,796.95	
Rental of state-owned equipment	20.00	
Total amount paid contractor		51,538.65
Grand total expended on project, all state funds		$ 61,616.95

SEGREGATION OF FUNDS

Expended 1925-26 biennium	$ 1,414.53
Expended 1927-28 biennium	58,174.57
Expended 1929-30 biennium	2,027.85
Total expenditures	$ 61,616.95

Corvallis Maintenance Headquarters

This site was purchased and improved by filling and by constructing a concrete retaining wall during the previous biennium. A contract for the construction of a maintenance building 28 by 72 feet was awarded March 8, 1929, to Barham Brothers, of Salem, Oregon, who completed the job April 10th at a cost of $3,535.10.

Additional expenditures for improvements have brought the total cost during 1929-1930 to $5,266.90, from state funds.

A. A. Amort was Resident Engineer in charge of construction.

Further details will be found on page 244 of the 1927-28 report.

Timber Revetment near Corvallis

On the Albany-Corvallis Highway at a point about one-quarter of a mile north of the north corporate limit of the city of Corvallis, on the west bank of the Willamette River.

Contract No. 1,003, awarded September 27, 1927, to Leander Lebeck, of Portland, Oregon. Work commenced October 15, 1927; completed December 10, 1927. Final cost, $8,873.31. Resident Engineer, A. A. Amort.

The project was completed during the previous biennium and a descriptive article will be found on page 241 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 218.12
Labor and materials furnished by state:		
Backfilling behind timber revetment		1,694.76
Repairing washouts in backfill		848.33
Contract items as follows:		
Timber piling, 5,219.9 lin. ft. at 60c	$ 3,131.94	
Lumber and timber, 51.382 M-FBM at $58.00	2,980.16	
Total amount paid to contractor		6,112.10
Grand total cost of revetment, all state funds		$ 8,873.31
SEGREGATION OF FUNDS		
Expended 1927-28 biennium	$ 8,024.98	
Expended 1929-30 biennium	848.33	
Total of expenditures	$ 8,873.31	

North Fork of Alsea River Bridge

On the Alsea Highway near Alsea; one 30-foot concrete span, one 100-foot concrete span and one 40-foot concrete span.

Contract No. 905, awarded July 29, 1926, to Stephens & Bolderson, of Alsea, Oregon. Work commenced August 8, 1926; completed May 10, 1927. Final cost, $18,482.85. Resident Engineer, John H. Neef.

This structure was completed in 1927 and a complete description will be found on page 242 of the 1927-28 report. The project was opened during the past biennium only to record the receipt of $21.79 for salvaged materials in connection with the work performed by state forces completing the structure. This credit reduces the total cost of the bridge to $18,482.85, of which $12,839.97 have been expended from state funds, and $5,642.88 from county funds.

CLACKAMAS COUNTY

The close of the year 1926 was marked by the completion of the last section of original construction of the State Highway System in Clackamas County, and for the two succeeding bienniums state highway construction work in that county has been confined to major and minor betterment work. During the two-year period just ending, the regrading of the Multnomah County Line-Oswego section and the regrading and paving of the Canemah-New Era section on the Pacific Highway, the paving of the Multnomah County Line-Sandy section, and resurfacing of the Rhododendron-Government Camp section on the Mt. Hood Highway, have been major projects undertaken.

During the last year, the location and adoption, as a part of the Federal Aid System of a new highway between Oregon City and Portland, on the east side of the Willamette River, have also been accomplished and while that highway has not yet been definitely designated as a part of the State Highway System, yet such designation will, no doubt, be made and under the urge of the rapidly increasing traffic and the necessity for additional and more adequate highway facilities leading out of Portland to the south, will, unquestionably, be built in the not distant future.

Additional betterment has been given the Mt. Hood Highway in a section between Sandy and Rhododendron by the construction of several sections of bituminous macadam, and in connection with the contract for resurfacing of the Rhododendron-Government Camp section, crushed rock has been secured for a bituminous macadam surface between those points which it is planned to construct in 1931.

State work in the county during the biennium has been under the supervision of W. D. Clarke, Division Engineer, with headquarters at Salem.

Sandy-East Bituminous Macadam

On the Mt. Hood Highway, from the junction with the Bull Run Road at Sandy to a point 0.81 mile east; 0.81 mile of bituminous macadam, 0.36 mile being 1½ inches thick and 0.45 mile being 2½ inches thick, and constructed 18 feet in width. Work performed by state crew under Foreman Chas. Young during July, 1930. Final cost, $3,802.69, from state funds. Resident Engineer, F. D. Eason.

Forest Boundary-Rhododendron Bituminous Macadam

On the Mt. Hood Highway, from the west forest boundary to Rhododendron; 2.01 miles of bituminous macadam, 18 feet in width and 2 inches in thickness. Work done by state oiling crew under Foreman Chas. Young during July, 1930. Final cost, $6,801.48, from state funds. Resident Engineer, F. D. Eason.

Canemah-New Era Widening and Resurfacing

Federal Aid Project No. 132-B

On the Pacific Highway from Sta. 220+46.2, which station is near the south limits of the town of Canemah, south to Sta. 27+00, which station is approximately one-half mile south of the town of New Era; 4.67 miles of grade widening, roadbed widened to a minimum of 36 feet; and 2.37 miles of resurfacing.

Contract No. 1,029, awarded January 26, 1928, to John Slotte & Co., Inc., of Astoria, Oregon. Work commenced February 6, 1928; completed April 20, 1929; final cost, $170,144.99. Resident Engineer, F. T. Young.

Regrading of the Canemah-New Era section of the Pacific Highway, begun in 1928 and completed in April, 1929, was described at some length on page 248 of the last biennial report. The most important matter in connection with this contract aside from the features described in the earlier report is that of the settlement made with the contractor because of the enlargements and changes made in the work after the contract was let, due mainly to the revisions in line necessary to provide for the future double-tracking of the Southern Pacific Railroad. Bids for excavation on this project were taken on an unclassified basis, but the section was divided into units where the character of the material changed radically, each unit taking a separate price for excavation. A large part of the work involved in the changes on account of the Southern Pacific Company were in a unit requiring rock excavation, all of which took the same bid price, but which varied considerably at different points in difficulty and therefore in expense of excavation. It developed that the increases in the excavation were much greater at points where the excavation was more expensive per cubic yard than in the less expensive places; this being the normal result of the fact that the additional work required naturally occurred at points where the rock bluffs were steepest and the railroad and highway, therefore, closer together. The contractor was able to make a satisfactory and convincing showing of his method of calculation of his original unclassified bid, and to prove that his bid was the result of averaging the estimated costs of these various parts of the unit. An adjustment was, therefore, made in the price, which was a recomputation of the average, using the same estimated costs for the corresponding parts of the work, weighted with the actual quantities of material excavated at each point instead of the preliminary estimate of such quantities upon which his average bid was based. A further adjustment was made because the additional work ran the contract over into the winter when operations were considerably more costly, the contractor having completed the full amount of contract yardage before bad weather set in. These adjustments were made without serious controversy and the contract was completed within the time allowed as reasonable extension of the contract time, in view of the increased amount of work.

Further details will be found on page 248 of the 1927-1928 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 14,121.49
Rental of state equipment furnished to contractor		526.00
Moving Teklinburg building at New Era		1,491.00
Digging drainage ditches		14.75
Constructing guard fences		345.13
Cleaning ditches and culverts		30.00
Constructing surfacing		117.44
Sprinkling surfacing materials		826.57
Constructing and maintaining detour roads		7,522.27
Providing watchmen, signs, barricades, etc., for traffic control		2,179.42
Payment by Southern Pacific Co. for widening its road bed Cr.		42,904.14
Contract items as follows:		
Clearing and grubbing, lump sum	$ 1,200.00	
Extra clearing and grubbing, 7.2 acres at $450.00	3,240.00	
Class "A" excavation, 26,699. 6 cu. yds. at 44c	11,747.82	
Class "B" excavation, 87,487.9 cu. yds. at 90c	78,739.11	
Structural excavation, 1,844.1 cu. yds. at $2.00	3,688.20	
Overhaul, 142,828 yd. sta. at 3c	4,284.84	
Truck haul, 34,155 yd. mi. at 20c	6,831.00	
6-inch porous tile drain, 670 lin. ft. at 30c	201.00	
8-inch porous tile drain, 1,176 lin. ft. at 40c	470.40	
12-inch plain concrete pipe, 952 lin. ft. at $1.50	1,428.00	
18-inch reinforced concrete pipe, 66 lin. ft. at $3.00	198.00	
12-inch corrugated iron pipe, 332 lin. ft. at $1.60	531.20	
18-inch corrugated iron pipe, 36 lin. ft. at $3.00	108.00	
36-inch corrugated iron pipe, 34 lin. ft. at $7.00	238.00	
Class "A" concrete, 114.73 cu. yds. at $29.00	3,327.17	
Class "B" concrete, 24.53 cu. yds. at $27.00	662.31	
Reinforcing steel, 3,353.0 lbs. at $0.08	268.24	
Rubble masonry, 697.3 cu. yds. at $9.00	6,275.70	
Parapet wall, 1,886.3 cu. yds. at $5.75	10,846.23	
Rock backfill for drains, 206.1 cu. yds. at $3.50	721.35	
Removal of guard fence, 5,421 lin. ft. at 10c	542.10	
Removal of old pavement, 2,263.1 sq. yds. at 60c	1,357.86	
Base course surfacing, 3,503 cu. yds. at $3.40	11,910.20	
Top course surfacing, 1,179.5 cu. yds. at $3.40	4,010.30	
Telford base, 554.6 cu. yds. at $2.00	1,109.20	
Box flume, 277 lin. ft. at $0.60	166.20	
Force account:		
Protecting S. P. track from rock thrown by blasts	530.78	
Constructing dry rock wall, Sta. 77+50 to Sta 79+60	215.84	
Furnishing and placing filler in gravel surfacing	1,186.95	
Removing part of old concrete wall above grade	219.51	
Removing slide from S. P. roadbed, Sta. 71-72	25.79	
Constructing dry rock wall, Sta. 15+96 to Sta. 16+30	49.18	
Clearing traveled roadway of embankment materials	379.30	
Building fill approaches to New Era bridge	229.74	
Lost time drilling rock account of line change	75.52	
Extra cost of private road approach, Sta. 189+50	32.83	
Spreading wet slide material, Sta. 147-152	824.88	
Dislodging dangerous rocks above cuts	28.14	
Extra cost of spreading fill at Teklenburg property	14.08	
Refinishing due to grade change, Sta. 123-128	52.13	
Spreading cushion materials on fills	98.50	
Extra cost of resloping wet "slide cuts"	379.62	
Protecting telegraph wires and R. R. track opposite Sta. 85-95 as compensation for extra expense of change in plans	599.92	
Adjustment for relocation of highway	27,355.92	
Total earned by contractor	$186,401.06	
Deduction for equipment rental	526.00	
Total amount paid to contractor		185,875.06
Grand total cost of project		$170,144.99

PARTICIPATION IN COST

	State	*Government*	*Total*
Expended 1927-28 biennium	$ 67,379.71	$ 48,041.63	$115,421.34
Expended 1929-30 biennium	27,637.25	27,086.40	54,723.65
Total	$ 95,016.96	$ 75,128.03	$170,144.99

Multnomah County Line-Sandy Concrete Paving

Federal Aid Project No. 156-C

On the Mt. Hood Highway, from Sta. 364+11, which station is at the Multnomah-Clackamas County line, about five miles east of Gresham, to Sta. 4+50, which station is 0.08 mile west of the junction of the highway with the Sandy-Bull Run Road near the east corporate limit of Sandy; 6.80 miles of concrete pavement.

Contract No. 1,208, awarded June 26, 1930, to Jacobsen-Jensen Company, of Portland, Oregon. Work commenced July 22, 1930; estimated cost, $210,000, consisting of $84,840.54 from state funds, and $125,159.46 from government funds; expenditures to date have amounted to $45,-042.52, from state funds. Resident Engineer, R. A. Furrow.

Because of the rapid increase in traffic both in volume of automobile traffic and both volume and weight of commercial truck traffic on the Mt. Hood Loop Highway, the latter being particularly noticeable with the completion of the Wapinitia Highway which is developing a growing freight business of wheat and other products from and general freight traffic to central Oregon and because of the difficulty experienced in maintaining a satisfactory macadam surface on the Multnomah County Line-Sandy section where either a complete resurfacing and bituminous macadam wearing surface construction or paving appeared unavoidable, the Highway Commission decided to construct a standard 20-foot concrete pavement.

In connection with this improvement a change of route through the city of Sandy was also considered. No decision in this matter had been reached when the paving contract was let but arrangements were made with the contractor under which that revision might be made or not as the Commission might later decide. The change involved passing through the city on a straighter, shorter line by way of Proctor Avenue instead of following the existing highway route via Main Street, thus giving the city the benefit of having two improved streets instead of one and at the same time relieving the congestion which has existed on the present route at times of heavy travel. Naturally some opposition was voiced by a few individuals doing business on Main Street, but the majority of property owners and residents were strongly in favor of the proposed rerouting and the change was, therefore, adopted.

The project provided for a pavement 20 feet in width with seven feet of shoulder on each side, of which four feet will be rocked. The oil mat material from the old surfacing has been salvaged to a depth of approximately two inches and this material is to be used for construction of the rock shoulders, with sufficient additional crushed gravel to give the required thickness of 6 inches when compacted. Some minor changes in line and grade have been made by which the maximum curve has been reduced to 4 degrees and some of the vertical curves have been lengthened to give adequate sight distance.

Through the city the roadbed is to be graded to a "street section" formed for sidewalks and curbs and the pavement constructed with "tongue" edge and tie bars for future widening when it is desired to pave the remainder of the street. The pavement within, as well as without, the city is standard 7 inches in thickness in the center with edges tapered to 9 inches in the outside 3 feet; 60-foot panels between expansion joints with dummy contraction joints at the 20-foot intermediate points; center tongue and groove joint formed by a metal center piece with five ½-inch by 36-inch tie bars to each 20 foot and with four ¾-inch by 36-inch dowels at each expansion joint using metal sleeves on one side of the expansion joint and embedded in the concrete on the other. There being satisfactory detour roads available this entire project is being laid full width in one pour.

The paving of the section from the Multnomah County line to the west city limit of Sandy has been completed in 1930 and the grading for the city section will be done this year, the paving through the city being postponed until 1931.

Canemah-New Era Paving

Federal Aid Project No. 132-B

On the Pacific Highway, from Sta. 221+73.5, which station is at the south edge of the town of Canemah, south to Sta. 27+06, which station is about one-half mile south of the New Era Post Office; 4.40 miles of paving.

Contract No. 1,089, awarded May 14, 1929, to Geo. C. Arenz of Portland, Oregon. Work commenced May 27, 1929; completed November 27, 1929. Final cost, $173,418.01. Resident Engineer, F. T. Young.

Following completion of the regrading of the Canemah-New Era section, a contract for paving was let in May, 1929. This pavement is a standard 20-foot concrete pavement 7 inches in thickness in the center and tapering to 9 inches at the edges in the outer three feet on each side. Crushed gravel shoulders 6 feet in width and 6 inches in compacted thickness were constructed on each side with 4 feet of additional earth shoulder except in solid rock excavation sections where the earth shoulder was omitted and the rock shoulder narrowed up somewhat.

Owing to the heavy traffic upon this highway it was deemed advisable to lay the pavement in two strips, permitting traffic to follow the highway in one direction and necessitating the use of a detour in one direction only. Southbound traffic was accomodated over the highway and northbound traffic was detoured from New Era to Oregon City. At three points—one on the hill south of New Era and two on the hill near Coalca—short sections aggregating 1,320 feet were left unpaved because of heavy fills which it was deemed were not sufficiently settled to justify paving. These gaps have been covered with macadam with bitumnious wearing surface. On this project for the first time in state highway paving contracts foreign cement was used for most of the pavement, although it was necessary to use some local cement because a sufficient quantity of foreign cement was not available in time for testing. So far as there has been time for observation, no appreciable difference between the parts of the pavement in which the different cements were used has been noted.

[CLACKAMAS]

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 7,815.94
Rental on state equipment deducted from contractor's estimate		140.00
Labor and materials furnished by state:		
Damage to private property by state roller		200.00
Constructing wooden gutters		24.35
Constructing and lengthening culverts		186.01
Constructing tile drains		1,402.82
Digging drainage ditches		938.06
Constructing guard fence		147.93
Cleaning ditches and removing slides		284.15
Maintaining completed portions of section		1,534.32
Constructing and maintaining detours		3,871.94
Watchmen and signs for traffic control		2,129.14
Oiling unpaved portions of section		4,646.68
Royalty on embankment materials		197.40
Contract items as follows:		
Rock surfacing, base course, 415.5 cu. yds. at $2.25	$ 934.88	
Metal reinforcement, 90,756.5 lbs. at 6c	5,445.39	
Contraction joints, 15,497.8 lin. ft. at 10c	1,549.78	
Removal of old pavement, 12,340.6 sq. yds. at 30c	3,702.18	
Excavation, single classification, 3,038.2 cu. yds. at $1.25	3,797.75	
Truck measure borrow, 19,858 cu. yds. at 60c	11,914.80	
Hauling excavated materials, in place measurement, 875 cu. yds. at 40c	350.00	
Hauling excavation, truck measure, 18,333.0 cu. yds. at 20c	3,666.60	
Preparation of subgrade, 52,225.3 sq. yds. at 6c	3,133.52	
Concrete paving, 52,225.3 sq. yds. at $1.95	101,839.34	
Expansion joints, 7,998.2 lin. ft. at 15c	1,199.73	
Rock shoulders—base, 3,558 cu. yds. at $2.00	7,116.00	
Rock shoulders—top, 1,911 cu. yds. at $2.00	3,822.00	
Force account items as follows:		
Reset forms after grade change	110.44	
Pump, supplies and water used in sprinkling operations	290.52	
Removing large rocks from borrow materials	1,009.62	
Construct shoulder drains	74.82	
Reconstruct ditches to form wide shoulder	41.81	
Construct retaining wall	40.09	
Total amount earned by contractor	$150,039.27	
Deduction for rental of state equipment	140.00	
Total amount paid to contractor		149,899.27
Grand total cost of project, all state funds, 1929-30		$173,418.01

PARTICIPATION IN COST

	State	Government	Total
Expended to date	$173,418.01	$	$173,418.01
Balance to complete	Cr. 11,384.11	11,384.11	
Estimated total cost	$162,033.90	$ 11,384.11	$173,418.01

Mt. Hood Loop Forest Road Project Widening

The work on this reconstruction project during 1929 and 1930 has been a continuation of the work begun in May, 1926, consisting of widening various sections and taking off points and curves by day labor, and in particular the completing of the work in the vicinity of Government Camp and Swim. There remains about 10,000 yards of excavation yet to be moved, and with favorable weather the project should be completed this year.

There has been expended to date a total of $96,656.39, consisting of $70,000 from state funds and $26,656.39 from government funds.

Further details will be found on page 249 of the 1927-28 report.

Rhododendron-Government Camp Resurfacing

Federal Aid Project No. 156-B

On the Mt. Hood Highway, from Sta. 524+50.4, which station is about one-half mile east of Rhododendron, east to Sta. 0+00, which station is about three-quarters of a mile east of Government Camp; 10.38 miles of resurfacing.

Contract No. 1130, awarded October 30, 1929, to the Morrison Trucking Company, of Portland, Oregon. Work commenced November 18, 1929; completed October 31, 1930. Estimated cost, $90,000; consisting of $55,408.96 from state funds and $34,591.04 from government funds; expenditures to date, $63,747.81 from state funds and $5,421.09 from government funds. Resident Engineer, R. A. Furrow.

Widening of the Rhododendron-Government Camp section of the Mt. Hood Loop Highway, begun in 1926 by the Bureau of Public Roads, has been completed in 1930 and in anticipation of such completion during this year a contract was awarded in October, 1929, for the resurfacing of that section and for furnishing crushed rock material for bituminous macadam wearing surface. Practically nothing was actually done on this contract during 1929, but the work has been entirely completed during 1930 and in addition about two miles have been partially surfaced east of Government Camp where further regrading work by the Bureau of Public Roads has been done during the season. This work east of Government Camp has involved some quite considerable changes in line and grade and surfacing of the road was necessary in order to maintain traffic during the coming winter.

The original specifications for surfacing under this contract provided for a sub-base course of 2½ inch to 1½ inch crushed rock, varying in thickness, on different sections where sub-grade conditions varied, from 6 to 10 inches, with a base course of 1½ inch to 1 inch material, and the top course of 1 inch to ⅛ inch material. Because of the character of the rock, the utter lack of suitable earth filler material in that locality, and the unavailability of sprinkling equipment, considerable difficulty was experienced at the start in getting the surfacing satisfactorily compacted, and in the endeavor to improve this condition a change in the specifications was made to provide for a combined sub-base and base material from 2½ inch to 1 inch, placed in the same number of layers as though consisting of the originally specified different sizes, and the size of top material was changed to 1 inch to ½ inch, thus leaving a larger amount of screen rejection material for use as binder. This rejection material from the crushing operation was found to be the most satisfactory binder material available and was used in connection with a coarse sand filler. Rock was secured from a quarry immediately along the highway at the crossing of Little Zigzag Creek and the sand filler from pits located near the quarry. As a further means of securing a satisfactory set-up of the top of the surfacing, that part of the section from Rhododendron to Twin Bridges was given a surface mix light oil treatment, this work being done by state forces. No. 2 road oil at the rate of 0.82 gallons per square yard was used for this purpose and a very satisfactory temporary oiled surfacing was secured. For the section between Twin Bridges and

Government Camp sprinkling equipment was available and with the occasional rains which occurred during the construction of that part of the surfacing, a satisfactory set-up was secured without the necessity for the oil treatment. This resurfacing contract has been completed during 1930 and the bituminous macadam surface will be constructed during next year.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 2,193.92
Labor and materials furnished by state:		
Lease of stock pile site		50.00
Preparing stock pile sites		1,395.30
Maintaining completed portions		141.17
Sprinkling surfacing		1,679.44
Hauling and stockpiling maintenance materials		485.65
Application of oil for dust palliative and temporary surface		2,256.97
Contract items as follows:		
Sub-base course surfacing, 842.0 cu. yds. at $1.15	$ 9,683.00	
Base course surfacing, 7,969 cu. yds. at $1.15	9,164.35	
Top course surfacing, 4,858 cu. yds. at $1.15	5,586.70	
Grade "A" materials in stock pile, 2,532 cu. yds. at $1.15	2,911.80	
Grade "B" materials in stock pile, 5,475 cu. yds. at $1.15	6,296.25	
Grade "C" materials in stock pile, 6,027 cu. yds. at $1.15	6,931.05	
Screen rejections in stock pile, 725 cu. yds. at 10c	72.50	
Screen rejection filler, 382 cu. yds. at 50c	191.00	
Screened gravel filler, 6,802 cu. yds. at 50c	3,401.00	
Earth shoulder construction, 1,195 cu. yds. at 50c	597.50	
Hauling broken stone (truck measure), 162,180 cu. mi. at 16c	16,348.80	
Hauling broken stone (pile measure), 29,825 cu. yds. at 18c	5,368.50	
Total amount earned by contractor	$ 66,552.45	
Deduction for retained percentage	5,586.00	
Total amount paid to contractor		60,966.45
Grand total expended on project, 1929-30		$ 69,168.90

PARTICIPATION IN COST

	State	*Government*	*Total*
Total of expenditures	$ 63,747.81	$ 5,421.09	$ 69,168.90
Estimated cost to complete	Cr. 8,338.85	29,169.95	20,831.10
Estimated total costs	$ 55,408.96	$ 34,591.04	$ 90,000.00

Multnomah County Line-Oswego Regrading

On the Pacific Highway, from Sta. 338+70.9, which station is at the Multnomah-Clackamas County line, to Sta. 290+20.8, which station is in the town of Oswego; 0.92 miles of grading.

Contract No. 1166, awarded March 27, 1930, to W. H. Hauser of Oakland, California. Work commenced April 12, 1930; completed September 30, 1930. Estimated cost, $75,000 from state funds; expenditures to date, $68,899.91. Resident Engineer, F. T. Young.

Improvement of the Multnomah County line-Oswego section of the Pacific Highway, for which survey was started in the last biennium, was put under contract in March, 1930. This project was developed as a cooperative project with the Southern Pacific Company and provided for a culvert and fill at Tryon Creek in lieu of the bridge by which the highway formerly crossed that stream. The height of the grade line of both highway and railroad above the bed of the stream and the close proximity of the two lines precluded the possibility of either the railroad or the highway being filled unless the other should also adopt a similar construction. The railroad trestle was also scheduled for renewal in 1930 and it was hoped that the railroad company would consent to constructing a fill instead of a new trestle, as the capitalized cost of a fill was slightly less than for a creosoted timber structure with ballast deck. In view, however, of the uncertainty as to the future of branch railroad lines, the company refused to incur the greater immediate expenditure for the fill improvement, but agreed to cooperate in the joint project to the amount of the cost of such a creosoted timber ballast deck structure. This cost was estimated to be $16,544. The combined project as actually constructed is therefore an 8-foot by 8-foot reinforced concrete box culvert with joint fill carrying the railroad and the highway. Since excavation quantities on the remaining portion of the highway improvement project did not provide material sufficient for this fill, the railroad company themselves have put in a part of the fill by work train service.

The highway has been graded to a width of 50 feet, contemplating the future construction of a three-lane pavement 30 feet in width, connecting with the three-lane 27-foot pavement of Multnomah county on the north and with the paved street of Oswego on the south.

The project includes construction of approximately 250 feet of rubble masonry retaining wall where slopes from the highway would otherwise encroach upon the railroad and also the construction of a reinforced concrete water tank as a right of way consideration to replace a similar tank necessarily destroyed by the highway construction.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,740.50
Labor and materials furnished by state:		
Purchase of right-of-way		12,228.34
Building approach roads		207.12
Sprinkling surfacing		115.09
Signs and reflectors for traffic control		7.00
Replacing tank and water system to private property		769.91
Contract items as follows:		
Clearing and grubbing, 95 per cent, all	$ 3,325.00	
Excavation, single classification, 58,930 cu. yds. at 65c	38,304.50	
Overhaul, 69,500 yd. stas. at 2c	1,390.00	
Truck haul, 14,500 yd. mi. at 20c	2,900.00	
Base course surfacing, 492 cu. yds. at $3.50	1,722.00	
Top course surfacing, 212 cu. yds. at $3.50	742.00	
Rubble masonry, 600 cu. yds. at $15.00	9,000.00	
12-inch concrete pipe, 60 lin. ft. at $1.50	90.00	
12-inch corrugated iron pipe, 18 lin. ft. at $1.50	27.00	
Class "C" concrete, 1 cu. yd. at $30.00	30.00	
Force account items:		
Reconstructing water pipe lines to new reservoir	359.00	
Constructing retaining wall	52.29	
Sprinkling Tryon creek fill to eliminate dust	25.29	
Total amount earned by contractor	$ 57,967.08	
Deduction for retained percentage	4,135.13	
Total amount paid to contractor		53,831.95
Grand total expended, all state funds, 1929-30		$ 68,899.91

[CLACKAMAS]

Salmon River Bridge

Federal Aid Project No. 156-A

On the Mt. Hood Highway near Brightwood; 100-foot steel deck truss on dumb-bell piers, four 30-foot reinforced concrete approach spans; 24-foot roadway and two 3-foot sidewalks.

Contract No. 1104, awarded July 3, 1929, to Rigdon Bros., of Woodburn, Oregon. Work commenced August 2, 1929; completed May 10, 1930. Final cost, $24,595.38. Resident Engineer, Frank Moore.

This bridge replaces a covered wooden span, and was built in connection with a minor line and grade change which eliminated a dangerous curve at the end of the old structure. Sidewalks care for pedestrian travel to and from the auto camps at the west end of the bridge.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,875.83
Hauling gravel with state trucks, to be deducted from contractor's estimate		12.00
Contract items as follows:		
Excavation, 369.7 cu. yds. at $2.50	$ 924.25	
Excavation below elevation, 13.1 cu. yds. at $4.00	52,40	
Class "A" concrete, 152.89 cu. yds. at $20.00	3,057.80	
Class "B" concrete, 86.45 cu. yds. at $16.00	1,383.20	
Class "D" concrete, 211.29 cu. yds. at $22.50	4,754.03	
Metal reinforcement, 78,137 lbs. at 4.5c	3,516.17	
Structural steel, 98,936 lbs. at 6.9c	6,826.58	
Concrete handrail, 456 lin. ft. at $4.50	2,052.00	
Removal of old bridge and maintenance of traffic	250.00	
Total amount earned by contractor	$ 22,816.43	
Deductions:		
Hauling gravel with state trucks	12.00	
Cement adjustment	96.88	
Total amount paid to contractor		22,707.55
Grand total cost of bridge, 1929-30		$ 24,595.38

PARTICIPATION IN COST

	State	*Government*	*Total*
Total expended to date	$ 10,931.37	$ 13,664.01	$ 24,595.38
Estimated cost to complete	Cr. 2,952.61	2,952.61	....
Estimated total cost	$ 7,978.76	$ 16,616.62	$ 24,595.38

Tryon Creek Culvert

On the Pacific Highway near Oswego; 8 by 8-foot by 317-foot reinforced concrete box culvert over Tryon Creek.

Contract No. 1128, awarded September 26, 1929, to E. F. Balgemann, of Portland, Oregon. Work commenced November 1, 1929; completed February 15, 1930. Final cost, $10,618.10. Resident Engineer, R. G. Barnes.

This culvert is part of the widening and realigning project between Oswego and the Multnomah County line. The culvert extends under both the highway and the Southern Pacific Railroad which adjoins the highway on the east. It replaces a timber trestle which was built on poor alignment. It was possible to get cooperation from the Southern Pacific Railroad Company on this structure due to the fact that they will also be enabled to eliminate a trestle. The Railroad Company and the Highway Commission each paid for that portion of the culvert on their own right of way.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 272.12
Contract items as follows:		
Excavation, 392 cu. yds. at $3.95	$ 1,548.40	
Class "A" concrete, 373.6 cu. yds. at $14.00	5,230.40	
Metal reinforcement, 8,264.0 lbs. at $4.15	3,429.56	
Force account items:		
Leveling foundation with gravel to save concrete	179.29	
Total amount earned by contractor	$ 10,387.65	
Deduction for cement adjustment	41.67	
Total amount paid to contractor		10,345.98
Grand total cost of structure, all state funds, 1929-30		$ 10,618.10

Parrott Creek Bridge

Federal Aid Project No. 132-A

On the Pacific Highway at New Era; 240-foot concrete viaduct with 27-foot roadway and two 3½-foot sidewalks.

Contract No. 1010, awarded October 25, 1927, to Rigdon Bros., of Woodburn, Oregon. Work commenced September 16, 1927; completed November 1, 1928. Final cost, $35,091.28. Resident Engineer J. T. Skelton.

This bridge replaced a dangerously narrow timber trestle at New Era Station on the East Side Pacific Highway. The bridge was designed and built as a continuous structure without expansion joints. A white plaster finish was used on all exposed surfaces of the concrete. The 27-foot roadway and sidewalks are in keeping with the reconstructed roadbed and pavement on the New Era-Canemah section which joins it on the north.

Further details will be found on page 250 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 2,825.11
Labor and materials furnished by state:		
Foundation investigation		972.23
Reinforcing wingwall		764.07
Bronze name plates		19.18
Contract items as follows:		
Excavation to plan elevation, 971.0 cu. yds. at $1.50	$ 1,456.50	
Excavation below elevation, 62.0 cu. yds. at $3.00	186.00	
Class "A" concrete, 675.3 cu. yds. at $20.50	13,843.65	
Class "D" concrete, 206.68 cu. yds. at $20.50	4,236.94	
Metal reinforcement, 165,220.0 lbs. at 3½c	5,782.70	
Concrete handrail, 492.17 lin. ft. at $5.00	2,460.85	
Removal of old bridge and maintenance of traffic, lump sum	1,800.00	
Cement adjustment, ½ bbl. at $2.96	1.48	
Force account items:		
Test loading wing footing in bent No. 8	29.86	
Extra expense due to raising grade of bridge	153.48	
Copper water stops in wing walls	71.80	
Placing rockers on end columns	49.21	
Asphalting joints between wing walls and columns	9.74	
Extra expense to take extensometer readings	125.43	
Placing dry masonry walls between columns in bents 1 and 8	248.37	
Moving equipment, repairing wing wall, and removing lights from detour bridge	54.68	
Total amount paid to contractor		30,510.69
Grand total cost of structure		$ 35,091.28

PARTICIPATION IN COST

	State	*Government*	*Total*
Expended 1927-28 biennium	$ 16,514.31	$ 16,904.79	$ 33,419.10
Expended 1929-30 biennium	Cr. 1,074.53	2,746.71	1,672.18
Total of expenditures	$ 15,439.78	$ 19,651.50	$ 35,091.28

Maintenance

The State Highway System within the limits of Clackamas County comprises a total of 66.67 miles of highway, consisting of 3.40 miles of bituminous pavement, 15.35 miles of concrete pavement, 20.97 miles of bituminous macadam and 26.95 miles of oiled macadam.

During 1929 and 1930, the principal work in the way of maintenance and minor betterments done in Clackamas County has been the application of a non-skid surface treatment to the pavement of the Pacific Highway between New Era and Salem and the oiling and bituminous macadam work done on the Mt. Hood Highway.

In 1929, the entire length of the Pacific Highway in Clackamas County south of New Era, except the concrete pavement section between Canby and Aurora, was treated with such non-skid surface. For this work Gasco Road Binder No. 2 and crushed gravel screenings of three-fourths and half-inch size were used, material from the Willamette River at Salem being used for the southerly portion, and material from a pit near Canby for the northerly portion. The screenings used in this work have proven to be too fine to give a satisfactorily permanent non-skid surface and in all probability this section will require a retreatment in the course of a few years, using the larger material of one and a quarter-inch size which was adopted for work on other sections treated in 1930.

On the Mt. Hood Highway, the biennium just ended has seen the accomplishment of a complete surfacing with heavy oil surface treatment or bituminous macadam as far as Rhododendron. Beyond that point the road was given a temporary surface treatment during and prior to 1929, but during 1930 has been under construction, and, except for the reoiling of the section from Wapinitia Junction to the Hood River County line and the light oil surface mix treatment of the newly completed resurface between Rhododendron and Twin Bridges, has remained unoiled.

A more detailed description of the various types of oiling and bituminous macadam may be found in the report of the Maintenance Department.

During 1930 additional betterment work on the Mt. Hood Highway has been done in the construction of the Department's latest standard guard fence on a number of sharp curves and other sections where the danger of cars leaving the grade has made such protection desirable. This guard fence has been constructed with posts of Port Orford cedar veneer cores with single rail of double 3 by 8 fir lumber and galvanized cable.

Maintenance work in Clackamas county has been under the field direction of F. D. Eason, Resident Engineer with headquarters at McMinnville.

Expenditures, during the biennium, for general maintenance purposes, have been $105,986.30, and for minor betterment work, $16,607.57.

Maintenance Building at Sandy

On Mt. Hood Highway at Sandy; 28 by 60-foot standard maintenance storage shed.

Contract No. 1080, awarded March 8, 1929, to J. W. Creighton, of Portland, Oregon. Work commenced March 20, 1929; completed May 20, 1929. Final cost, $4,236.16. Resident Engineer, F. D. Eason.

Multnomah County Line-Oswego Survey

In connection with the actual undertaking of the reconstruction of the Multnomah County-Oswego section of the Pacific Highway for which preliminary survey was made in 1927, further surveys for adjusting the final location to the culvert and fill project in cooperation with the Southern Pacific Company at Tryon Creek as adopted, have been made and the relocation definitely established for the construction contract which was let in 1930.

This revision covers 0.92 miles south from the Multnomah County line to "B" Street in the City of Oswego. F. T. Young, Resident Engineer, has been in charge of the survey work.

Survey for Line Revisions, Mt. Hood Highway in Clackamas County

Owing to the necessity for renewal or replacement of the Zigzag River bridge at Rhododendron on the Mt. Hood Loop Highway, a survey was made in 1929 for a revision in line from Rhododendron west for about 0.8 mile to eliminate several sharp curves at the crossings of Zigzag River and Still Creek. Because of the amount of work involved in the change and right-of-way difficulties which would require considerable time to adjust, and because the condition of the old bridge made any delay inadvisable, it was decided to replace the bridge in kind, i. e., with a wooden truss span upon the old piers, and postpone until a later time the revision in the line. The location of the new line was completed, however, and right-of-way negotiations are to be carried on to prepare for the future construction of the revision.

This survey was made by H. C. Broadwell, Acting Resident Engineer, and involved about 3.5 miles of survey lines.

CLATSOP COUNTY

State highway work in Clatsop County during the two-year period just closing has been limited to betterment work, and one small project that is in reality new construction. This project, which is uncompleted at the close of 1930, is the construction of a new bridge and the grading of embankment approaches at the crossing of the Necanicum River about two miles south of Seaside. The construction of a new bridge over Wahanna Creek, at the north city limits of Seaside and a small change of alignment in connection therewith was undertaken during this biennium and completed.

The most important betterment project has been the grading of approximately 0.79 miles on the Gnat Creek-Rock Creek section of the Columbia Highway, which project was initiated in 1927 by the construction of two large reinforced concrete box culverts at Big Noise Creek and Rock Creek, and continued with the construction of a new bridge at Gnat Creek and regrading of the entire section upon greatly improved alignment in 1928 and 1929. Minor betterments in the way of small widening projects at Skipanon, Knappa and Ferris Creek where two small bridges have been replaced with culverts have also been completed. On the Roosevelt Coast Highway construction of bituminous macadam on the section between Seaside and Hamlet Junction has also been finished.

For the near future the most important reconstruction project contemplated is a relocation between Knappa and a point about one and a half miles west which will provide a much needed improvement in the under crossing of the Big Creek Logging Company's railroad.

Work of the department in Clatsop County during the two-year period has been under the supervision of W. D. Clarke, Division Engineer, with headquarters at Salem.

Cannon Beach Junction-Hamlet Junction Bituminous Macadam

On the Roosevelt Coast Highway between Cannon Beach Junction and Hamlet Junction; 7.62 miles of bituminous macadam surfacing, 2.5 miles being 2⅞ inches in thickness and 5.12 miles being 2 inches in thickness, all being 18 feet in width. Work performed during September, 1930, by state oiling crew under Foreman O. C. Yocum. The total expenditures to date have amounted to $20,891.99 from state funds. Resident Engineer, G. S. Gray.

Astoria-Seaside Non-skid Surface Treatment

On the Roosevelt Coast Highway, from Miles Crossing, at Mile Point 4.4 to north city limits of Seaside at Mile Point 18.75; 14.35 miles of non-skid surface treatment. This work was begun September 1, 1930, and was not completed at the date of this report. D. B. Cooper was foreman in charge of the oiling crew.

Estimated cost, $15,000 from state funds. Expenditures to date have amounted to $4,935.34. Resident Engineer, G. S. Gray.

Rock used in this work was stockpiled under the Miles Crossing-Cannon Beach contract.

Big Noise Creek-Gnat Creek Resurfacing

Federal Aid Project No. 135-B

On the Lower Columbia River Highway, from Sta. 1004+73.2, which station is about four miles east of Knappa to Sta. 889+00 which station is about three miles west of Bradley Park (Clatsop Crest); 2.19 miles of regrading to a standard 36-foot roadbed, not including ditches.

Contract No. 1114, awarded September 4, 1929, to John Slotte and Company, of Astoria, Oregon. Work commenced September 16, 1929; completed March 31, 1930; final cost, $19,517.68. Resident Engineer, F. T. Young.

Following completion of Big Noise Creek-Rock Creek section, the adjoining section of 2.19 miles lying east of Big Noise Creek and including a new concrete bridge over Gnat Creek was put under construction, the bridge, however, being under a separate contract from the grading. As in the case of the Big Noise Creek-Rock Creek section, this improvement affords very material betterment in the matter of alignment and the paving or surfacing of the section is planned for 1931.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,965.13
Contract items as follows:		
Clearing and grubbing, all	$ 2,500.00	
Excavation, single classification, 26,715.2 cu. yds. at 40c	10,686.08	
Truck haul, 1,804 yd. mi. at 20c	360.80	
Overhaul, 26,154 yd. sta. at 2c	523.08	
12-inch concrete pipe, 255 lin. ft. at $1.50	382.50	
18-inch concrete pipe, 147 lin. ft. at $2.00	294.00	
24-inch concrete pipe, 117 lin. ft. at $3.00	351.00	
8-inch concrete drain tile, 614 lin. ft. at 75c	460.50	
Class "C" concrete, 22.58 cu. yds. at $26.00	587.08	
Base course crushed rock, 140.5 cu. yds. at $4.15	583.08	
Top course crushed rock, 36 cu. yds. $4.15	149.40	
Force account items:		
Excavating and removing logs from old fill	524.38	
Constructing rock drains	368.55	
Placing rock foundation under culvert pipe	27.72	
Wet excavation under culvert outlets	95.32	
Total amount earned by contractor	17,893.49	
Deduction for engineering cost after time limit	340.94	
Total amount paid to contractor		17,552.55
Grand total cost of project, 1929-30		$ 19,517.68

PARTICIPATION IN COST

	State	*Government*	*Total*
Expended to date	$ 11,328.56	$ 8,189.12	$ 19,517.68
Estimated cost to complete	Cr. 2,259.54	2,259.54	....
Estimated total cost	$ 9,069.02	$ 10,448.66	$ 19,517.68

Cannon Beach Junction-Nehalem Summit Betterment Materials

On the Roosevelt Coast Highway, from Mile Point 25.0, which point is about 5 miles south of Seaside and about one mile south of the junction of the Roosevelt Coast Highway with the county road leading to Cannon Beach, south to Mile Point 37.0 which point is about 0.7 mile south of the summit between the Nehalem and Necanicum Rivers; 12.0 miles of furnishing maintenance materials.

Contract No. 1167, awarded March 27, 1930, to Arthur Gentemann, of Mt. Angel, Oregon. Work commenced May 13, 1930; completed August 30, 1930. Estimated cost, $21,000 from state funds; expenditures to date, $19,814.37. Resident Engineer, G. S. Gray.

Placing of bituminous macadam on the Roosevelt Highway from Seaside to Hamlet Junction, which was begun in 1928, has been completed in 1929 and 1930. For the completion of the work it was necessary to secure additional crushed rock material. This material was furnished under a contract let in March, 1930, to Arthur Gentemann under which material has been provided for a future resurfacing of the lighter type bituminous macadam laid on the first sections which were surfaced. This rock was furnished from the state-owned quarry known as the Hjortland quarry about 10.7 miles south of Seaside.

Rock Creek-Big Noise Creek Grading

Federal Aid Project No. 135-A

On the Lower Columbia River Highway, from Sta. 0+00, which station is at Mile Point 84.47 to Sta. 1048+00, there being an equation between of 22+90.4 equals 1029+00, which point is at Mile Point 85.26; 0.79 miles of grading.

Contract No. 1052, awarded December 19, 1928, to N. C. Casciato, of Portland, Oregon. Work commenced February 6, 1929; completed Aug. 29, 1929; final cost, $25,964.99. Resident Engineer, B. O. Johnson.

Following completion of the culverts at Rock Creek and Big Noise Creek, which were constructed during the previous biennium, regrading of that section was undertaken in 1929. This project, although only about eight-tenths of a mile in length will eliminate a number of very sharp and dangerous curves besides having replaced with culverts and fills the existing wood and timber structures. Surfacing or pavement of the section has not yet been done but is planned for the 1931 season in connection with the adjoining Gnat Creek-Big Noise Creek section.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,857.62
Signs for traffic control		17.80
Clearing outside of regular 80 foot right-of-way		469.80
Contract items as follows:		
Clearing and grubbing, lump sum	$ 750.00	
Common excavation, 44,246.6 cu. yds. at 40c	17,698.64	
Overhaul, 47,216.0 yd. stas. at 3c	1,416.48	
Lumber and timber, 41,620 M-FBM at $50.00	2,081.00	
12-inch concrete pipe, 75 lin. ft. at $1.50	112.50	
24-inch concrete pipe, 39 lin. ft. at $3.00	117.00	
Temporary guard fence, 616 lin. ft. at 40c	246.40	
Force account items as follows:		
Making channel change in Rock Creek	114.86	
Clearing and grubbing outside of right-of-way	445.10	
Resloping cut banks	153.17	
Constructing wooden gutters	306.69	
Constructing culvert headwalls and a concrete 48-inch to 24-inch culvert pipe reducer	177.93	
Total amount paid to contractor		23,619.77
Grand total cost of project, 1929-30		$ 25,964.99

PARTICIPATION IN COST

State	$ 15,827.68	
Government	10,137.31	
Total		$ 25,964.99

Skipanon River Bridge

Federal Aid Project No. 115-C

On the Roosevelt Coast Highway, 8½ miles south of Astoria; two 45-foot concrete approach spans and one 40-foot I-Beam lift span with wooden deck, 24-foot clear roadway.

Contract No. 1092, awarded April 19, 1929, to Clackamas Construction Co., of Tillamook, Oregon. Work commenced May 1, 1929; completed December 1, 1929. Final cost, $17,697.55. Resident Engineer, J. T. Skelton.

This bridge replaces an obsolete timber draw bridge which was on a very poor angle with the highway alignment. Several bad accidents have occurred at the old site due to the poor alignment. The new bridge includes a 40-foot lift span so arranged that it can be opened if the necessity arises.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 2,059.55
Labor and materials furnished by the state:		
Bronze name plates		21.10
Signs for the control of traffic		54.01
Grading and paving approaches		1,204.64
Contract items as follows:		
Excavation, 194.65 cu. yds. at $5.00	$ 973.25	
Excavation below elevation, 4.0 cu. yds. at $5.00	20.00	
Fir piling, 632.0 lin. ft. at 35c	221.20	
Class “A’ concrete, 229.55 cu. yds. at $19.00	4,361.45	
Class “D” concrete, 66.64 cu. yds. at $19.00	1,266.16	
Reinforcing steel, 47,896.0 lbs. at 5c	2,394.80	
Lumber and timber, 7.168 M-FBM at $100.00	716.80	
Structural steel, 22,010.0 lbs. at 7½c	1,672.76	
Concrete handrail, 197.67 lin. ft. at $3.00	593.01	
Removal of old bridge, lump sum	935.00	
Maintenance of traffic, lump sum	1,200.00	
Piling cut-off, 662.0 lin. ft. at 11.72c	77.59	
Force account items:		
Erecting office for engineer	15.91	
Total amount earned by contractor	$ 14,447.93	
Cement adjustment, 29.5 bbls. at $3.04	89.68	
Total amount paid to contractor		14,358.25
Grand total cost of project, 1929-30		$ 17,697.55

PARTICIPATION IN COST

	State	Government	Total
Total expended to date	$ 9,415.09	$ 8,282.46	$ 17,697.55
Estimated cost to complete ....Cr.	1,543.57	1,543.57	....
Estimated total cost	$ 7,871.52	$ 9,826.03	$ 17,697.55

Hamlet Junction-Nehalem Summit Bituminous Macadam

On the Roosevelt Coast Highway, from Hamlet Junction to a point 3.1 miles south; 3.1 miles of bituminous macadam, 1½ inches in thickness and 18 feet in width. Work performed by state oiling crew under Foreman D. Cooper during June, 1930.

Estimated cost, $7,000 from state funds. Expenditures to date have amounted to $6,017.17. Resident Engineer, G. S. Gray.

[CLATSOP]

Wahanna Creek Bridge and Private Under-Crossing

Federal Aid Project No. 115-D

On the Roosevelt Coast Highway north of Seaside.

Contract No. 1158, awarded March 7, 1930, to F. L. Odom, of Salem, Oregon. Work commenced March 8, 1930; completed September 30, 1930. Estimated cost, $37,000. Resident Engineer, J. T. Skelton.

The bridge over Wahanna Creek consists of four 52-foot, 6-inch continuous reinforced concrete spans with 27-foot roadway and two 5-foot sidewalks. This bridge, which is located at the north entrance of Seaside, replaces a narrow structure. The entire length of the bridge is on a long easy curve and eliminates the sharp curve at the north end of the old bridge. The private under-crossing consists of a 30-foot concrete span with 27-foot roadway, replacing an obsolete trestle over a private road near the grounds of the Astoria country club and the new structure is on a minor line change which straightens the highway at this point. Both of the structures are complete but final settlement has not been made.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,171.63
Labor and materials furnished by state:		
Bronze name plates and bench mark		21.45
Red reflectors and signs for traffic control		19.76
Grading approaches		783.45
Contract items as follows:		
Wahanna Creek Bridge:		
Excavation, 250 cu. yds. at $6.00	$ 1,500.00	
Excavation below elevation, 21 cu. yds. at $8.00	168.00	
Foundation piling, 1,349 lin. ft. at 70c	944.30	
Seal concrete, 103 cu. yds. at $16.00	1,648.00	
Class "A" concrete, 520 cu. yds. at $18.50	9,620.00	
Class "D" concrete, 185 cu. yds. at $20.00	3,700.00	
Reinforcing steel, 128,400 lbs. at 4.4c	5,649.60	
Concrete handrail, 125 lin. ft. at $4.50	562.50	
Pile cut-offs, 449 lin. ft. at 11.55c	51.86	
Private Undercrossing:		
Excavation, 73.82 cu. yds. at $2.50	184.55	
Class "A" concrete, 49.71 cu. yds. at $20.00	994.20	
Class "D" concrete, 23.22 cu. yds. at $20.00	464.40	
Reinforcing steel, 12,793 lbs. at 5c	639.65	
Concrete handrail, 71.29 lin. ft. at $3.50	249.52	
Removal of old bridge and maintenance of traffic	100.00	
Materials on hand	704.90	
Total amount earned by contractor	$ 27,181.48	
Deductions:		
Reduction in total amount on account of being awarded Necanicum River bridge contract	150.36	
Retained percentage	2,394.11	
Total amount paid to contractor		24,637.01
Total amount expended on project, 1929-30		$ 26,633.30

PARTICIPATION IN COST

	State	*Government*	*Total*
Total of expenditures	$ 15,225.12	$ 11,408.18	$ 26.633.30
Estimated cost to complete	1,852.53	8,514.17	10,366.70
Estimated total cost	$ 17,077.65	$ 19,922.35	$ 37,000.00

Gnat and Ferris Creek Bridges

Federal Aid Project No. 135-B

On the Lower Columbia River Highway near Svenson.

Contract No. 1121, awarded September 4, 1929, to Clackamas Construction Co., of Portland, Oregon. Work commenced September 11, 1929; completed November 15, 1929. Final cost, $23,239.23. Resident Engineer, J. T. Skelton.

The bridge over Gnat Creek is a 165-foot concrete viaduct and replaces an obsolete timber trestle. The structure at Ferris Creek is a 7 by 8-foot concrete culvert and by means of a channel change has replaced two timber trestles.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 2,161.52
Labor and materials furnished by state:		
Bronze name plates and bench marks		33.86
Constructing approaches		2,361.65
Constructing guard fence		125.95
Contract items as follows:		
Gnat Creek:		
Excavation, 159.7 cu. yds. at $2.50	$ 399.25	
Excavation below elevation, 21.54 cu. yds. at $5.00	107.70	
Class "A" concrete, 242.49 cu. yds. at $19.00	4,607.31	
Class "D" concrete, 131.67 cu. yds. at $19.00	2,501.73	
Reinforcing steel, 79,605.0 lbs. at $4.75	3,781.24	
Concrete handrail, 342.69 lin. ft. at $4.50	1,542.11	
Removal of old bridge, lump sum	300.00	
Cement adjustment, 3.75 bbls. at $3.25	12.19	
Force account items:		
Removing drift from above old bridge	724.35	
Ferris Creek:		
Excavation, 303.14 cu. yds. at $2.50	757.85	
Class "A" concrete, 112.68 cu. yds. at $19.00	2,140.92	
Reinforcing steel, 8,680 lbs. at 5c	434.00	
Removal of old bridge and maintenance of traffic	650.00	
Cement adjustment, 6 bbls. at $3.10	18.60	
Force account items:		
Furnishing and driving foundation piling	579.00	
Total payment to contractor		18,556.25
Grand total cost of bridges, 1929-30		$ 23,239.23

PARTICIPATION IN COST

	State	Government	Total
Total expended to date	$ 15,672.29	$ 7,566.94	$ 23,239.23
Estimated cost to complete	Cr. 1,609.18	1,609.18	
Estimated total cost	$ 14,063.11	$ 9,176.12	$ 23,239.23

Necanicum and Wahanna Bridge Approaches Grading

Federal Aid Projects Nos. 115-E & D

On the Roosevelt Coast Highway at the Necanicum River about 3 miles south of Seaside, 0.97 of a mile in length; and at Wahanna Creek, at the north corporate limit of Seaside, 0.10 of a mile in length. 1.07 miles of grading bridge approaches.

Contract No. 1219, awarded August 28, 1930, to Roy L. Houck, of Independence, Oregon. Work commenced September 15, 1930. Estimated cost, $12,000, consisting of $6,188.74 from state funds and $5,811.26 from government funds. No expenditures to date. Resident Engineer, G. S. Gray.

Grading of the approaches to the new Necanicum River bridge about 3 miles south of Seaside will complete the last unimproved gap in the state highways of Clatsop County. With the Necanicum approaches there is also joined in the same contract the construction of approaches to the new bridge over Wahanna Creek at Seaside.

These approach fills will be rock surfaced by state forces as soon as completed and the new bridges put into service at once.

Necanicum River Bridge

Federal Aid Project No. 115-E

On the Roosevelt Coast Highway about three miles south of Seaside; two 52-foot and one 68-foot reinforced concrete spans, with 27-foot clear roadway.

Contract No. 1157, awarded February 27, 1930, to F. L. Odom, of Salem, Oregon. Work commenced May 6, 1930; completed August 31, 1930. Estimated cost, $17,000. Resident Engineer, J. T. Skelton.

This bridge replaces a narrow steel span near the same site. The new location eliminates several bad curves leading to the old structure.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 529.25
Bronze name plates and bench mark		21.44
Contract items as follows:		
Excavation, 214 cu. yds. at $5.00	$ 1,070.00	
Foundation piling, 749 lin. ft. at 70c	524.30	
Class "A" concrete, 280 cu. yds. at $19.00	5,320.00	
Class "D" concrete, 126 cu. yds. at $19.00	2,394.00	
Concrete handrail, 350 lin. ft. at $4.50	1,575.00	
Reinforcing steel, 79,885 lbs. at 4.4c	3,514.94	
Extra piling cut-off, 620 lin. ft. at 11.55c	71.61	
Total amount earned by contractor	$ 14,469.85	
Deductions:		
Reduction in total cost of job, due to being awarded contract for Wahanna Creek bridge	171.84	
Retained percentage	1,115.92	
Total amount paid to contractor		13,182.09
Total amount expended on project, 1929-30		$ 13,742.78

PARTICIPATION IN COST

	State	*Government*	*Total*
Total expenditures	$ 5,064.13	$ 8,678.65	$ 13,742.78
Estimated cost to complete	1,939.00	1,318.22	3,257.22
Estimated total cost	$ 7,003.13	$ 9,996.87	$ 17,000.00

Rock Creek-Big Noise Creek Culverts

This project was completed during 1928 and is described on page 262 of the 1927-28 report. The only expenditure this biennium was the payment of $1,973.32 by the government. The total cost of the project has amounted to $10,152.11, of which $5,480.15 was expended from state funds and $4,671.96 from government funds.

Maintenance

In Clatsop county, as in other counties having sections of unpaved highway, the principal maintenance and betterment work during the biennium of 1929 and 1930 has been oiling and reoiling and construction of bituminous macadam. In Clatsop county the close of the biennium finds all unpaved sections of the highways so treated. From Seaside to a point 3 miles south of Hamlet Junction bituminous macadam has been constructed the entire distance, partly in 1929 and partly in 1930, while from a point 3 miles south of Hamlet Junction to the Tillamook county line the road has been given a surface treatment of heavy oil.

All sections of bitulithic pavement within the county have also been treated with a non-skid surface. A small portion of the Columbia River Highway was done in 1928, the balance in 1929, and the Roosevelt Coast Highway between Miles Crossing and Seaside in 1930. In that part of the work done in 1928 which comprised an aggregate of 5.2 miles on the grades leading to Clatsop Crest and a few short sections as described on page 263 of the report for 1927-28, where it had been noted that traffic was having the most difficulty from skidding, the material used was ¾-inch crushed gravel screenings with No. 2 Gasco Road Binder. In the work of 1929, crushed rock screenings partly 1-inch maximum size and partly 1⅛-inch maximum size, were used and the more satisfactory results obtained from the larger material were in considerable measure responsible for the still further increase in the size of the material used in 1930. In all of the 1930 work, 1¼-inch material was used and the character of the surface obtained both as to effectiveness and anticipated permanence has fully justified the use of coarser material.

In addition to the non-skid and oiling and bituminous macadam work, there have been the regular routine operations of the maintenance of roadbed shoulders, drainage, etc., on the 67.13 miles of state highway within the county, which mileage consists of 33.50 miles of bituminous pavement, 9.60 miles of concrete pavement, 15.14 miles of bituminous macadam, and 8.89 miles of oiled macadam.

In addition to these routine operations, practically all of the original guard fence along the Columbia River Highway has been reconstructed. These fences were originally built with untreated fir posts which had reached a stage of deterioration making them no longer an adequate protection. They were of the old type two-rail fence and reconstruction was done by removing the posts, cutting them off at the original ground line and resetting the top portion using the two former rail timbers as a two-ply single rail. This method of reconstruction afforded a fence fully as effective as the original fence without need for additional material.

Clatsop County state highway maintenance work has been in charge of G. S. Gray, Resident Engineer, with headquarters at Tillamook.

The expenditure for general maintenance work in the county for the past biennium was $62,858.44 and for minor betterment work, $20,065.85.

Miles Crossing-Cannon Beach Junction Maintenance Material

On the Roosevelt Coast Highway, from Mile Point 4.4, which point is at Miles Crossing, to Mile Point 25.0, which point is about one mile south of the junction of the highway with the road to Cannon Beach; 20.6 miles of furnishing maintenance materials in stockpiles.

Contract No. 1181, awarded April 18, 1930, to Carl Habekost, of Seaside, Oregon. Work commenced May 1, 1930, completed September 1, 1930. Estimated cost, $20,000, from state funds; expenditures to date, $19,814.37. Resident Engineer, G. S. Gray.

To provide materials for construction of non-skid surfacing on the bitulithic pavement between Miles Crossing and Seaside, contract was awarded in April, 1930, to Carl Habekost. The material furnished was crushed gravel from a dry pit near the south city limit of Seaside, supplemented by a small amount of crushed rock furnished for the north end of the work from the Astoria Crushed Rock Company's quarry at Astoria.

Hamlet Junction-Tillamook County Line Survey

During 1930 a survey was made for a possible reconstruction of the Roosevelt Coast Highway in Clatsop County from the Tillamook County line north for an aggregate distance of 4.29 miles in sections between surveys previously made for relocation of the Soapstone Creek bridge and for a line change at Jack Horner Creek, connecting up those sections and extending the relocation survey to the Tillamook County line. This survey was occasioned primarily by the fact that the present highway along the bluff at what is known as Clatsop Quarry, about 1¼ miles north of the Tillamook County line is very narrow and is gradually becoming narrower by slipping off of the edge of the roadbed over the bluff into the Nehalem River.

In view of the fact that the State Highway Commission has recently adopted the so-called Cannon Beach-Neah-kah-nie Mountain route as a substitute route for the Roosevelt Coast Highway between Cannon Beach Junction and Wheeler, no general reconstruction of the section between the Tillamook County line and Soapstone Creek on the present route will probably be made, although some improvement in the crossing of the north fork of the Nehalem River, where a new bridge will soon be absolutely necessary, will have to be made before the Cannon Beach-Neah-kah-nie Mountain section can be completed, in order to make the present road adequate and safe for traffic until the coast line is open for travel.

This survey was under the direction of G. S. Gray, Resident Engineer.

Gnat Creek-Big Noise Creek Survey

Survey of the Gnat Creek-Big Noise Creek section of the Lower Columbia Highway in Clatsop County made during the previous biennium in anticipation of the construction of a new bridge over Gnat Creek, provided a location for that bridge different from that of the old bridge, and also involved some considerable line changes immediately east of Gnat Creek. During the biennium just ended, some revisions and adjustments of the new location were made, under the supervision of B. O. Johnson, Resident Engineer.

COLUMBIA COUNTY

The Columbia River Highway is the only state highway passing through Columbia County. Original construction of this highway was completed in 1923, since which time there has been no new construction and no major betterments have been undertaken until 1930. During the past year, the widening of the highway through the restricted section of Houlton within the city limits of the city of St. Helens has been undertaken and a very much needed improvement has been made which it is hoped may be further extended in the near future when right of way arrangements can be satisfactorily completed.

During the biennium just closed non-skid treatment of the bituminous pavement has been completed throughout the county.

All state highway matters in Columbia County have been in charge of W. D. Clarke, Division Engineer, with headquarters at Salem.

Grade Widening at St. Helens

On the Lower Columbia River Highway, from Mile Point 27.00 to Mile Point 29.09, said points being through the corporate limits of the town of St. Helens and 1.33 miles south of the south corporate limit. Actual work done in this project was short sections aggregating in all 0.82 mile of grade widening by state forces. Prior to and in connection with the grade widening, a contract was let for moving 24 buildings at Houlton in the city of St. Helens, as follows:

Contract No. 1173, awarded March 27, 1930, to A. C. Baumback, of Boring, Oregon. Work commenced April 1, 1930; completed June 30, 1930. Final cost, $41,240.27, from state funds. Resident Engineer, R. A. Furrow.

The most restricted condition and one of the most hazardous points on the Lower Columbia River Highway has been the crossing of that highway with the St. Helens-Vernonia road at Houlton in the city of St. Helens. For some distance in either direction from that intersection the highway right of way which lies parallel and adjacent to the Seattle, Portland & Spokane railroad was very narrow, for a part of the distance being only 28 feet in width. At each of the two corners at that intersection, opposite the railroad, a large store building stood close to the pavement, making both corners exceedingly blind and dangerous to traffic. The widening project, which was undertaken in 1930, was primarily a right of way project, the actual roadbed construction work being a minor part of the job. The negotiations for the right of way involving as they did the moving of approximately two dozen buildings and the readjustment of properties by the purchase of adjoining tracts deeded to the owners abutting on the highway in exchange for the property appropriated for the right of way involved many difficulties and a great deal of negotiation. While the arrangements were satisfactorily completed so as to permit the improvement of the most dangerous points, there still remains some further widening which should be done but which was not found practicable to do because of the impossibility of making reasonable arrangements with those who controlled the property. It is hoped, however, that these differences may be adjusted and the improvement extended in the not distant future.

The widening has been done to provide a right of way 70 feet in width, which is considered equivalent, in a situation where the highway is in effect a one-sided road by reason of being adjacent to the railroad, to an 80-foot right of way where both sides are susceptible of development. The highway has been graded to a street section with provisions for sidewalk and curb and in connection with the improvement the bridge over Milton Creek is also being widened to the full width of the right of way.

Moving of buildings and other improvements was let by contract to A. C. Baumback, and the grading work has been done by state forces. State force work was employed because of the small amount of work and the necessity for its being carried on simultaneously with the moving of buildings so that property owners and business interests might not be unduly inconvenienced by the operation.

Further details will be found on page 267 of the 1927-28 report.

Beaver Creek Bridge

On the Columbia River Highway about 6½ miles west of Rainier; one 39-foot concrete span set on top of old concrete abutments, with 27-foot clear roadway.

Contract No. 1147, awarded January 16, 1930, to Rigdon Bros., of Woodburn, Oregon. Work commenced February 13, 1930; completed April 10, 1930. Final cost, $4,530.87. Resident Engineer, Frank Moore.

This structure replaces an old steel span which was on the Lower Columbia Highway. It was possible to utilize the old abutments by extending them and adding wing walls.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 410.88
Contract items as follows:		
Excavation, 84 cu. yds. at $2.50	$ 210.00	
Class "A" concrete, 68.1 cu. yds. at $19.50	1,288.95	
Class "D" concrete, 31.85 cu. yds. at $19.50	621.08	
Metal reinforcement, 15.771 lbs. at $4.75	749.12	
Concrete handrail, 108 lin. ft. at 35.50c	594.00	
Removal of old bridge and maintenance of traffic	600.00	
Channel excavation, 18.8 cu. yds. at $1.00	18.80	
Cement adjustment, 7.5 bbls. at $3.25	24.38	
Force account item:		
Erecting temporary guard fence	13.66	
Total amount paid to contractor		4,119.99
Grand total cost of bridge, all state funds, 1929-30		$ 4,530.87

Milton Creek Bridge

On the Columbia River Highway in St. Helens; widen the three existing 30-foot spans from 18 to 60-foot roadway and place a 7-foot sidewalk.

Contract No. 1222, awarded August 28, 1930, to C. J. Montag, of Portland, Oregon. Work commenced October 3, 1930. Estimated cost $10,000, from state funds; expenditures to date amount to $14.31. Resident Engineer, W. R. Stretch.

The existing concrete bridge is being widened by the addition of 42 feet of roadway and a 7-foot sidewalk. One handrail was removed and the new structure built alongside the old. A non-skid oil macadam surface will be laid over both portions of the completed structure, giving a roadway width of 60 feet.

Maintenance

At the close of the present biennium there was under maintenance in Columbia County a total of 55.40 miles of state highway, consisting of 54.47 miles of bituminous pavement, and 0.93 mile of concrete pavement.

In this county the only items of maintenance or minor betterment work deserving special mention, aside from the routine maintenance of drainage, shoulders, and roadbed, have been the application of non-skid surface to the bitulithic pavement on the Columbia River Highway throughout and the reconstruction of guard fence. The work in each of these cases has been of the same character as described in the section of this report on maintenance and betterment work in Clatsop County. State highway maintenance work in Columbia County east of Delena has been under the supervision of F. D. Eason, Resident Engineer, with headquarters at McMinnville, and west of Delena under the supervision of G. S. Gray, Resident Engineer, with headquarters at Tillamook.

The expenditures for general maintenance work in the county during the past biennium have been $38,525.44 and the expenditures for minor betterments, $54,648.79.

Multnomah County Line-Rainier Survey

As a continuation of the widening of the right of way at Houlton, as reported on page 267 of the biennial report for 1927-28, surveys were made extending to a point south of McNulty for a similar widening of the right of way at a number of points between McNulty and St. Helens. These surveys were made at various times during the biennium when property owners expressed a willingness to cooperate in the widening by the donation of right of way, which in the main consisted of an additional 10-foot strip on the westerly side. Surveys were made in part by B. O. Johnson, Resident Engineer, and in part by H. C. Broadwell, Acting Resident Engineer.

COOS COUNTY

The original construction of the State Highway System in this county was completed several years ago, and the work done during the past biennium has consisted, mainly, of major betterments and maintenance operations.

The ferry across Coos Bay at North Bend has been moved to a more favorable location and new approaches built. Two long trestles have been eliminated by the construction of fills at Larson and Haynes' Sloughs. The bad curve north of Coos Bay has been eliminated by the construction of a concrete bridge and fill. All highways in this county with the exception of 14 miles north of Coos Bay are either oiled or paved.

The oiled macadam surfacing in this county has held up remarkably well, considering the heavy log-hauling traffic and the heavy rainfall to which it is subjected.

All work in the county has been in charge of W. E. Chandler, Division Engineer, with headquarters at Grants Pass.

Riverton-Bandon Bituminous Macadam

On the Roosevelt Coast Highway, from Mile Point 290.8 at Riverton to Mile Point 303.16 at the south corporate limit of Bandon; 12.36 miles of bituminous macadam wearing surface.

During July and August, 1930, this section was given an oil treatment only, preliminary to the bituminous macadam surface to be constructed in 1931. Estimated cost, $26,400, from state funds; expenditures to date have amounted to $9,496.12. Resident Engineer, Paul Van Scoy.

Riverton-Bandon-South Resurfacing

Federal Aid Project Nos. 82-A, 82-B and 109-B

On the Roosevelt Coast Highway, from Mile Point 291.16 near Riverton to Mile Point 309.16 (Sta. 85+50) approximately six miles south of the south corporate limit of the city of Bandon; 12.0 miles of resurfacing on that portion of the Roosevelt Coast Highway between Riverton and Bandon, and the furnishing of approximately 15,400 cubic yards of stockpiled materials on the 18-mile section from Riverton to a point six miles south of Bandon. Surfacing was constructed 18 feet wide and 8 inches thick; an additional shoulder one foot wide was built up from materials scarified and bladed from old surfacing.

Contract No. 1115, awarded August 29, 1929, to Newport & Pyle, assigned December 12, 1929, to F. J. Kernan, of Reedsport, Oregon. Work commenced February 1, 1930. Estimated cost, $170,000, consisting of $146,049.09 from state funds and $23,950.91 from government funds; expenditures to date have amounted to $100,250.08, of which the state has expended $96,904.36 and the government has expended $3,345.72. Resident Engineer, Paul Van Scoy.

The project is now completed except for the furnishing of a small amount of maintenance material. This contract was originally awarded to Newport & Pyle with the understanding that rock would be secured from the Tupper Rock quarry at Bandon. After many attempts to drill this rock, it was found impractical. The contractors, with the services of geologists and engineers made a thorough search of the surrounding country for other outcroppings but none was found. The contractors then investigated the possibility of securing Umpqua gravel and obtained a proposition from F. J. Kernan at Reedsport to furnish this gravel. The Commission approved the transfer of the contract to F. J. Kernan on December 12, 1929.

Lakeside Undercrossing Section Grading

Federal Aid Project No. 141-A

On the Roosevelt Coast Highway from Sta. 0 minus 300 to Sta. 17+00; 0.37 mile of grading of approaches to an undergrade crossing. This separation is approximately 1½ miles south of Lakeside.

Contract No. 1053, awarded December 19, 1928, to Tom N. Hull, of Brookings, Oregon. Work commenced January 7, 1929; completed March 26, 1929. Estimated cost, $22,023.09, consisting of $97.86 from state funds, $13,500 from government funds and $8,425.23 from railroad funds. A total of $3,781.40 has been expended from state funds to date. Resident Engineer, Paul Van Scoy.

The concrete structure was built by the Southern Pacific Railroad and the approach grading by the Highway Department. The estimated cost as given includes the entire cost of grading and structure. The expenditures by the Southern Pacific Company have not as yet been recorded on the cost books.

Haynes Slough, Larson Slough and Russell Point Grading

Federal Aid Project Nos. 141-B and 141-C

On the Roosevelt Coast Highway north of Coos Bay, Haynes Slough unit is about nine miles south of Lakeside. It extends from Sta. 197+50, south to Sta. 174+50. Larson Slough unit adjoins the Haynes Slough unit on the south and extends from Sta. 174+50 south to Sta. 143+80. The Russell Point unit is on the north shore of Coos Bay and about ½ mile west of Glasgow. It extends from Sta. 34+50 south to Sta. 20+00; 1.29 miles of grading, 28-foot roadway.

Contract No. 1201, awarded June 26, 1930, to Joplin & Eldon, of Portland, Oregon. Work commenced July 2, 1930. Estimated cost, $37,000, consisting of $14,978.67 from state funds and $22,021.33 from government funds; expenditures to date have amounted to $20,140.11, from state funds. Resident Engineer, Paul Van Scoy.

The two sloughs were filled and tide gates were placed in the old channel. The Russell Point section was graded for an approach to a new ferry slip on the north shore of Coos Bay.

Cunningham Creek Bridge Approaches Grading

On the Roosevelt Coast Highway, in the north part of the town of Coquille, 700 feet in length extending from Sta. 874+50 to Sta. 881+50; 0.13 mile of embankment approaches to the bridge over Cunningham Creek. A standard 28-foot grade was constructed.

Contract No. 1123, awarded September 26, 1929, to Tom N. Hull, of Brookings, Oregon. Work commenced October 12, 1929; completed November 20, 1929. Final cost, $6,745.93. Resident Engineer, Paul Van Scoy.

This project eliminated a 56-degree curve and in its place a 12-degree curve was built. The fill was allowed to stand over the winter of 1929 and 1930, and was then surfaced and paved in 1930 by state forces. One foot of gravel was used for the base on which was placed a 4-inch bituminous concrete wearing surface.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 120.49
Rental of state equipment furnished to contractor		17.60
Purchasing of right-of-way		274.84
Fencing or right-of-way and filler pits		75.34
Constructing and widening roadbed		821.54
Contract items as follows:		
Clearing and grubbing, all	$ 500.00	
Common excavation, 9,084.4 cu. yds. at 34½c	3,135.84	
Truck haul, 9,089.4 yd. mi. at 20c	1,817.88	
Total amount earned by contractor	$ 5,453.72	
Deduction for rental of state equipment	17.60	
Total amount paid to contractor		5,436.12
Grand total cost of project, all state funds, 1929-30		$ 6,745.93

Haynes Slough Trestle

Federal Aid Project No. 141-B

On the Roosevelt Coast Highway 3½ miles north of Coos Bay; 27-foot creosoted wood trestle span with tide gates and with 24-foot clear roadway.

Contract No. 1105, awarded June 27, 1929, to A. H. Kingsbury, of Oak Grove, Oregon. Work commenced September 16, 1929; completed December 12, 1929. Final cost, $9,019.47. Resident Engineer, R. T. Stanley.

This trestle replaces a long timber trestle and drawbridge. Tide gates are to be installed by the Haynes Slough Diking District. The approach fills and the tide gates on the trestle will reclaim many acres of land now tide marsh.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,103.71
Rental and supplies for pump		50.35
Rental and towing of barges used in riprap work		279.00
Driving test piling		159.00
Contract items as follows:		
Creosoted Douglas fir piling, 540.38 lin. ft. at $1.61	$ 870.01	
Piling cut-off, 51.62 lin. ft. at 80c	41.30	
Untreated lumber, 16.681 M-FBM at $47.00	784.01	
Creosoted lumber, 44.452 M-FBM at $97.00	4,311.84	
Trestle superstructure, 28.67 lin. ft. at $12.50	358.38	
Force account item:		
Wet excavation under timber cribs	1,061.87	
Total amount paid to contractor		7,427.41
Grand total cost of trestle, all state funds, 1929-30		$ 9,019.47

PARTICIPATION IN COST

	State	*Government*	*Total*
Expended to date	$ 6,257.32	$ 2,762.15	$ 9,019.47
Estimated cost to complete	Cr. 2,014.50	2,014.50	
Estimated total cost	$ 4,242.82	$ 4,776.65	$ 9,019.47

Coos Bay Ferry Slips

Federal Aid Project No. 141-C

On the Roosevelt Coast Highway at North Bend and at Russell Point. Ferry slips for Coos Bay ferry plying between Russell Point and North Bend. Includes 532 feet of pile trestle with 30-foot deck, 1,272 feet of pile trestle with 20-foot deck, two 60-foot wood trusses with two 15 by 30-foot wood floats.

Contract No. 1190, awarded April 30, 1930, to Tom Lillebo, of Reedsport, Oregon. Work commenced May 20, 1930; completed September 30, 1930. Estimated cost, $76,000. Resident Engineer, Frank Moore.

The project is complete but final settlement has not been made. The north ferry slip was built on a new location south from Russell Point, shortening the length of the Roosevelt Coast Highway by about ½ mile. It also places the ferry landing in water deep enough for navigation at all times. Traffic at the old Glasgow slip was maintained at a considerable expense due to the filling up of the channel by tidal currents. The ferry slips and approaches are electrically lighted.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,107.27
Labor and materials furnished by state:		
Improving stream channel		141.75
Surfacing bridge deck		83.25
Furnishing and placing temporary lights		27.90
Contract items as follows:		
North Bend Slip:		
Fir piling, 9,200 lin. ft. at 30c	$ 2,760.00	
Cresoted fir piling, 1,885 lin. ft. at 94c	1,771.90	
Creosoted fir lumber, 4.000 M-FBM at $80.00	320.00	
Fir lumber, 16.000 M-FBM at $41.00	656.00	
30 ft. trestle superstructure, 228 lin. ft. at $15.50	3,534.00	
Truss span, 100 per cent lump sum	3,138.00	
Wood float, 100 per cent lump sum	2,891.00	
Removal of old bridge and maintenance of traffic, 90 per cent lump sum	4,320.00	
Russell Point Slip:		
Fir piling, 10,500 lin. ft. at 30c	3,150.00	
Creosoted fir piling, 10,000 lin. ft. at 94c	9,400.00	
Creosoted fir lumber, 16.000 M-FBM at $80.00	1,280.00	
Fir lumber, 40.000 M-FBM at $41.00	1,640.00	
30-foot trestle superstructure, 304 lin. ft. at $15.50	4,712.00	
20-foot trestle superstructure, 1,275 lin. ft. at $12.25	15,594.25	
Truss span, 100 per cent lump sum	3,138.00	
Wood float, 80 per cent lump sum	2,312.80	
Materials on hand:		
Creosoted fir lumber, 5.000 M-FBM at $65.00	325.00	
Total amount earned by contractor	$ 60,942.95	
Deductions for retained percentage	4,952.12	
Total amount paid to contractor		55,990.83
Total amount expended, 1929-30		$ 57,351.00

PARTICIPATION IN COST

	State	*Government*	*Total*
Expended to date	$ 57,351.00		$ 57,351.00
Estimated cost to complete	Cr. 14,783.61	33,432.61	18,649.00
Estimated total cost	$ 42,567.39	$ 33,432.61	$ 76,000.00

Budd and Cunningham Creek Bridges

On the Roosevelt Coast Highway in north edge of Coquille.

Contract No. 1077, awarded March 8, 1929, to Hansen & Larson, of Portland, Oregon. Work commenced March 28, 1929; completed September 30, 1929. Final cost, $16,915.78. Resident Engineer, R. T. Stanley.

The bridge over Budd Creek is a 10 by 12-foot box culvert and replaces a timber span at the same site. A 24-foot pipe culvert was placed beneath the floor of this culvert to take care of future drainage of the land above the highway.

The bridge over Cunningham Creek is a 24-foot concrete span with 24-foot roadway and two 5-foot walks. It replaces a narrow timber trestle which was in the middle of a sharp curve. The replacement of these two structures, together with a line change at each end, eliminates one of the most dangerous spots that was left on the entire Roosevelt Coast Highway.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 2,036.97
Purchase of right-of-way		340.00
Labor and material furnished by state:		
39 feet of 18-inch culvert pipe		58.50
Name plates		25.58
Construction signs		27.00
Clearing creek channel		39.58
Contract items as follows:		
Budd Creek:		
Excavation, 157.6 cu. yds. at $1.00	$ 157.60	
Class "A" concrete, 120.25 cu. yds. at $24.60	2,958.40	
Reinforcing metal, 9,212.13 lbs. at 5c	460.61	
Fir piling, 1,278.25 lin. ft. at 50c	639.13	
Piling cut-off, 100.25 lin. ft. at 14 1-5c	14.24	
Removal of old bridge and maintenance of traffic, lump sum	429.00	
Force account items:		
Excavation for concrete cap on foundation piling	603.53	
Moving detour bridge to drive foundation piling	616.49	
Cunningham Creek:		
Excavation, 339.8 cu. yds. at 90c	305.82	
Class "A" ocncrete, 203.49 cu. yds. at $24.60	5,005.85	
Class "D" concrete, 21.04 cu. yds. at $22.00	462.88	
Reinforcing metal, 23,526 lbs. at 5c	1,176.30	
Concrete handrail, 51.5 lin. ft. at $3.00	154.50	
Fir piling, 2,461 lin. ft. at 50c	1,230.50	
Piling cut-off, 10 lin. ft. at 14 1-5c	1.42	
Excavation for cut-off wall, force account	333.88	
Cement adjustment, 181 sacks at 89½c Cr.	162.00	
Total amount paid contractor		14,388.15
Grand total cost of structures, all state funds, 1929-30		$ 16,915.78

Johnson Creek, Crooked Creek and Four-Mile Creek Bridges

Federal Aid Project No. 109-B

On the Roosevelt Coast Highway, on the Bandon-Curry County line section.

Contract No. 1088, awarded March 29, 1929, to J. R. Dickson, of Portland, Oregon. Work commenced May 13, 1929; completed November 15, 1929. Final cost, $25,485.96. Resident Engineer, R. T. Stanley.

The culvert over Johnson Creek is a 12 by 14-foot concrete box. The culvert over Crooked Creek is a 12 by 12-foot concrete box and the bridge over Four-Mile Creek is an 80-foot continuous type concrete viaduct. The bridge over Four-Mile Creek replaces a timber pile trestle which has been hard to maintain due to drift. A major channel change was made which improves the alignment of the creek under the bridge. The banks of the creek have been protected by a pile revetment which was built by state forces under the direction of W. G. Krueger, as foreman.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,869.36
Right-of-way for channel change at Four Mile Creek		187.00
Name plates furnished by state		25.68
Construction signs for control of traffic		43.20
385 cu. yds. of rock furnished from stock pile at Riverton		847.00
Bank protection work at Four Mile Creek		1,760.29
Contract items as follows:		
Johnson Creek Bridge:		
Excavation, 391.08 cu. yds. at $1.75	$ 684.39	
Fir piling, 822.09 lin. ft. at 60c	493.25	
Piling cutoff, 82.99 lin. ft. at 10½c	8.71	
Class "A" concrete, 186.52 cu. yds. at $17.00	3,170.84	
Metal reinforcement, 19,126.48 lbs. at 6c	1,147.59	
Removal of old bridge and maintenance of traffic, all	111.00	
Amount earned by contractor	$ 5,615.78	
Deduction for cement correction 11.25 bbls. at $3.07	34.54	
Total amount paid to contractor on Johnson Creek bridge		5,581.24
Crooked Creek:		
Excavation, 299.0 cu. yds. at $1.75	$ 523.25	
Fir piling, 606.27 lin. ft. at 60c	363.76	
Piling cutoff, 311.73 lin. ft. at 10½c	32.73	
Class "A" concrete, 196.52 cu. yds. at $17.00	3,340 84	
Metal reinforcement, 24,236.0 lbs. at 6c	1,454.16	
Removal of old bridge and maintenance of traffic, all	111.00	
Force account items:		
Providing for drainage of footings	64.04	
Extra cost of hauling aggregate from Riverton	63.97	
Amount earned by contractor	$ 5,953.75	
Deduction for cement correction, 11.00 bbls. at $3.07	33.77	
Total amount paid to contractor for Crooked Creek bridge		5,919.98
Four Mile Creek:		
Excavation, 137.4 cu. yds. at $7.00	$ 961.80	
Fir piling, 809.77 lin. ft. at 60c	485.86	
Piling cut-off, 270.23 lin. ft. at 10½c	28.37	
Class "A" concrete, 90.99 cu. yds. at $20.00	1,819.80	
Class "D" concrete, 55.35 cu. yds. at $24.00	1,328.40	
Metal reinforcement, 29,497.0 lbs. at 6c	1,769.82	
Concrete handrail, 172.6 lin. ft. at $4.00	690.40	
Channel change excavation, 2,279.36 cu. yds. at 5½c	1,196.66	
Clearing for channel change, all	100.00	
Removal of old bridge and maintenance of traffic, all	560.00	
Force account items:		
Placing pipe culvert to drain old channel	108.69	
Extra haul on aggregate from Riverton	291.44	
Amount earned by contractor	$ 9,341.24	
Deduction for cement correction, 29.0 bbls. at $3.07	89.03	
Total amount paid contractor for Four Mile Creek bridge		9,252.21
Grand total cost of structures, 1929-30		$ 25,485.96

PARTICIPATION IN COST

	State	Government	Total
Expended to date	$ 16,643.49	$ 8,842.47	$ 25,485.96
Estimated cost to complete	Cr. 5,684.26	5,684.26	
Estimated total cost	$ 10,959.23	$ 14,526.73	$ 25,485.96

[COOS]

Larson Slough Bridge

Federal Aid Project No. 141-B

On the Roosevelt Coast Highway 3 miles north of Coos Bay; 27-foot creosoted pile trestle with 24-foot clear roadway.

Contract No. 1174, awarded March 27, 1930, to Tom Lillebo, of Reedsport, Oregon. Work commenced June 3, 1930. Estimated cost, $9,000. Resident Engineer, Frank Moore.

This job is complete except for a few minor items being held up pending the installation of tide gates on the trestle, which work is being done by the Larson Slough Diking District. These tide gates and the approach fills will reclaim many acres of tide marsh.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 333.99
Riprapping by state forces		327.85
Contract items as follows:		
Excavation, 710 cu. yds. at $1.50	$ 1,065.00	
Creosoted fir piling, 492.2 lin. ft. at $1.20	590.64	
Creosoted ir lumber, 54.000 M-FBM at $103.00	5,562.00	
Port Orford cedar lumber, 3,360 M-FBM at $65.00	218.40	
Trestle superstructure, 28 lin. ft. at $18.00	504.00	
Piling cut-off, 73.8 lin. ft. at 78c	57.56	
Total amount earned by contractor	$ 7,997.60	
Deduction for retained percentage	239.93	
Total amount paid to contractor		7,757.67
Total amount expended on project, 1929-30		$ 8,419.51

PARTICIPATION IN COST

	State	*Government*	*Total*
Total expended to date	$ 8,419.51		$ 8,419.51
Estimated cost to complete	Cr. 4,552.11	5,132.60	580.49
Estimated total costs	$ 3,867.40	$ 5,132.60	$ 9,000.00

Storage Building at Coquille

On the Roosevelt Coast Highway at the town of Coquille; 48 by 96-foot standard frame maintenance storage building.

Contract No. 1199, awarded June 26, 1930, to Styris & Granstrom, of Coquille, Oregon. Work commenced July 7, 1930; completed August 5, 1930. Final cost, $2,705.66. Resident Engineer, Frank Moore.

This building was constructed on the property owned by the State of Oregon located on the Roosevelt Coast Highway near the north approach to the Coquille River Bridge. Shop buildings were erected on the property in 1925, and as storage space was limited in these buildings it was necessary to provide housing for equipment used in maintenance operations.

Maintenance

This has consisted of the usual patrol maintenance of 97.33 miles of highway, of which there are 0.31 mile of bituminous pavement, 17.80 miles of concrete pavement, 9.01 miles of bituminous macadam, 57.06 miles of oiled macadam, and 13.15 miles of untreated macadam.

There were 42.96 miles of untreated macadam oiled and 3.3 miles of oiled macadam reoiled during the biennium. In addition, 23.33 miles of untreated macadam were given an oil treatment preliminary to the construction of bituminous macadam in 1931.

Maintenance work in Coos County has been under the supervision of Paul Van Scoy, Resident Engineer, with headquarters at Coquille.

Total expenditures for general maintenance during the biennium have amounted to $216,783.50, and for minor betterments, $27,661.71.

Riverton-Coquille-Hoffman Bridge Resurfacing

On the Coos Bay-Roseburg and Roosevelt Coast Highways. The Riverton-Coquille section of the Roosevelt Coast Highway extends from the south end of the Coquille River Bridge at Coquille south and west six miles to the town of Riverton. The Coquille-Myrtle Point section of the Coos Bay-Roseburg Highway is 9.0 miles in length and extends from the end of the pavement in Coquille south to the beginning of the pavement in Myrtle Point. The Myrtle Point-Hoffman Bridge section of the Coos Bay-Roseburg Highway is 6.0 miles in length and extends from the end of the pavement in Myrtle Point south and east to a point 2.8 miles east of Hoffman Bridge; 21.0 miles of resurfacing.

Contract No. 1031, awarded March 27, 1928, to McGeorge Gravel Company, of Marshfield, Oregon. Work commenced April 16, 1928; completed March 8, 1929. Final cost, $59,338 from state funds. Resident Engineer, Paul Van Scoy.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 3,190.77
Freight on crushed gravel		20,801.34
Rental of stock pile sites		700.00
Preparing stock pile sites		967.26
Maintaining completed roadway		211.11
Prospecting for surfacing material		1,824.33
Constructing surfacing		5,029.82
Credit for materials used in bituminous macadam construction Cr.		49,115.00
Credit for materials used in construction of Bandon-South bridges Cr.		847.00
Contract items as follows:		
Grade "A" materials in stock piles, 3,795 cu. yds. at $2.35	$ 8,918.25	
Grade "B" materials in stock piles, 3,750 cu. yds. at $2.25	8,437.50	
Grade "C" materials in stock piles, 14,775 cu. yds. at $2.20	32,505.00	
Grade "D" materials in stock piles, 3,388 cu. yds. at $2.40	8,131.20	
Grade "E" materials in stock piles, 12,307.5 cu. yds at $2.35	28,922.63	
Grade "A" materials f. o. b. trucks, 722.5 cu. yds. at $1.85	1,336.63	
Grade "B" materials f. o. b. trucks, 727.5 cu. yds. at $1.80	1,309.50	
Grade "C" materials f. o. b. trucks, 2,357.5 cu. yds. at $1.80	4,243.50	
Grade "E" materials f. o. b. trucks, 332 cu. yds. at $1.90	630.80	
Truck haul, 15,687 yd. mi. at 16c	2,509.92	
Haul adjustment	431.78	
Total earned by contractor	$ 97,376.71	
Deduction for freight on gravel paid by state	20,801.34	
Total amount paid to contractor		76,575.37
Grand total cost of project, all state funds		$ 59,338.00

SEGREGATION OF FUNDS

Expended 1927-28 biennium	$ 11,632.69
Expended 1929-30 biennium	47,705.31
Total of expenditures	$ 59,338.00

Endicott Creek-Mystic Creek Maintenance Materials

On the Coos Bay-Roseburg Highway, from Mile Point 15.5, which point is about ½ mile west of the Endicott Creek crossing to Mile Point 40.0, which point is about 0.2 mile west of the Mystic Creek crossing; 24.5 miles of maintenance materials.

Contract No. 1071, awarded March 8, 1929, to A. S. Wallace, of Roseburg, Oregon. Work commenced March 16, 1929; completed September 9, 1929. Final cost, $59,328.07. Resident Engineer, Wm. Strohmeyer.

One and one half inch crusher run material was placed on the road to the extent of 650 cubic yards to the mile. Materials were placed in stockpiles for oiling to the extent of 430 cubic yards to the mile of 1½-inch to 1-inch material and 350 cubic yards to the mile of 1-inch to ⅛-inch material. This stock pile material was deposited for use in oiling the following year.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,566.68
Rental of stock pile sites		159.50
Preparing stock pile sites		458.48
Maintaining completed roadway		2,147.42
Sprinkling surfacing materials		2,728.50
Contract items as follows:		
Top material on road, 525 cu. yds. at $1.25	$ 656.25	
Crusher-run material on road, 10,084.5 cu. yds. at $1,20	12,101.40	
Base material in stock piles, 6,739.2 cu. yds. at $1.15	7,750.08	
Top material in stock piles, 5,459.2 cu. yds. at $1.25	6,824.00	
Top material in trucks, 140 cu. yds. at $1.25	175.00	
Hauling, truck measure, 73,968 yd. mi. at 17c	12,574.56	
Hauling, pile measure, 60,931 yd. mi. at 20c	12,186.20	
Total amount paid to contractor		52,267.49
Grand total cost of project, all state funds, 1929-30		$ 59,328.07

Larson-Haynes Slough Survey

This survey was begun November 8, 1927, and was practically completed in January, 1928. Between the latter date and the date the contract for grading was let on June 26, 1930, the original survey was revised, so that actually the survey was mostly done during 1929-1930. Paul Van Scoy was Resident Engineer in charge of the survey.

Further details will be found on page 269 of the 1927-28 report.

North Coos Bay Ferry Approach Survey

This survey was for the purpose of locating a more direct route to connect with the Coos Bay ferry on the north approach. The new alignment begins on the Roosevelt Coast Highway about 0.65 of a mile north of the former ferry terminal at Glasgow and follows a direct course over the tide lands towards the south side landing, a distance of 0.6 of a mile. The grading of the approach road was let under the same contract with improvement of the Haynes and Larson Slough project lying approximately three miles to the north.

The survey was made by Paul Van Scoy, Resident Engineer, and was completed June 30, 1930.

Myrtle Point-Douglas County Line Survey

Surveys were made during the year 1930 on the Coos Bay-Roseburg Highway between Big Creek Bridge, about 10 miles east of Myrtle Point, and Enchanted Prairie Quarry, with the intention of eliminating several sharp curves and replacing three small bridges with culverts and fills. The total length of the section involved in the betterment survey is 4.4 miles, of which 1.7 miles of survey were completed on September 30, 1930, under the direction of Wm. H. Strohmeyer, Resident Engineer.

CROOK COUNTY

During the past biennium, construction work was started on the Bear Creek-Millican Section of the Crooked River Highway, a total of 12.83 miles now being finished or under contract, which is the only project of major importance in this county. All other state highways in this county have been completed.

Several minor betterment projects, which consisted of roadbed widening, and the cleaning up of the right of way through the Ochoco Forest have been completed.

The work in this county is under the supervision of C. W. Wanzer, Division Engineer, with headquarters at Bend.

Maintenance

The highways under maintenance in this county, a total of 73.49 miles, consist of 45.12 miles on the Ochoco Highway and 28.37 miles on the Crooked River Highway, formerly called the Prineville-Lakeview Highway. On the Ochoco Highway 29.29 miles consist of untreated macadam and 16.03 miles of oiled macadam. The 28.37 miles on the Crooked River Highway have been surfaced in places with local material and the balance of the road is unsurfaced.

The maintenance on these roads consisted of the usual blading, cleaning of ditches, removal of slides and snow, and patching of the oiled sections. Most of the oiled sections of highway in this county require reoiling each year as the roadbed is so low that there is not adequate drainage.

The maintenance work in this county has been under the supervision of W. S. Hodge, Resident Maintenance Engineer, who is located at Redmond.

The expenditures for general maintenance in Crook County during the biennium have been $50,237.13 and for minor betterments $1,774.83.

Bear Creek-Millican Survey

This survey begins at the end of the improvement at Bear Creek on the Crooked River Highway and extends south to connect with the Central Oregon Highway at Millican. The line was originally located in 1922, and as it did not meet with present day standards, it was relocated. The alignment on the relocated line is better than on the original line and the construction costs will be less due to a change in the line from one side of the Sage Hollow canyon to the opposite side near the head of the canyon.

The survey was made under the direction of K. D. Lytle, Resident Engineer, and covers a distance of 12.44 miles. The field work was begun June 20, 1930, and the survey was completed September 30, 1930.

Prineville-Wheeler County Line Survey

During 1930, a survey was made to improve the alignment with the idea of reconstructing the present bridge at the first crossing of Ochoco Creek on the Ochoco Highway east of Prineville. The revised alignment was not used, however, and the present bridge was left in place and repaired. A total of 0.55 mile of survey line was made under the direction of W. S. Hodge, Resident Engineer.

CURRY COUNTY

There have been no major grading or surfacing projects in this county during the last two years, all having been completed prior to this period.

The major project in this county is the bridge across the Rogue River between Wedderburn and Gold Beach, a description of which will be found elsewhere in this report.

The work in the county has been in charge of Wm. E. Chandler, Division Engineer, with headquarters at Grants Pass.

Denmark-Port Orford Bituminous Macadam

On the Roosevelt Coast Highway, from Mile Point 318.83 at Denmark, south to Mile Point 329.75 at Port Orford; 10.92 miles of bituminous macadam wearing surface 18 feet in width.

The work completed in 1930 consisted of 5.41 miles of preliminary oiling from Denmark to Sixes River and 5.51 miles of bituminous macadam constructed from Sixes River to Port Orford. The oil used was Bitumuls shipped by boat to Bandon. The work was done by a state oiling crew under Foreman Ira Van Schaick and was supervised by Resident Engineer Paul Van Scoy. The estimated cost is $22,000 from state funds. Expenditures to date have amounted to $7,204.06.

Denmark-Port Orford Regrading and Resurfacing

Federal Aid Project Nos. 70-A, 70-B and 95

On the Roosevelt Coast Highway, from Sta. 705+51.6, which station is at the south end of the bridge over Willow Creek about 500 feet south of the Denmark post office to Sta. 134+29.5, which station is near the intersection of 6th and Jackson streets in the town of Port Orford; 10.83 miles of regrading and resurfacing. The grade was widened to a standard 28-foot section. Approximately 2,250 cubic yards of crushed gravel per mile were added making 9 inches of compacted surface 18 feet wide.

Contract No. 1150, awarded March 5, 1930, to Saxton and Looney, of Corvallis, Oregon. Work commenced March 6, 1930; completed September 15, 1930. Cost, $125,000, consisting of $81,756.41 from state funds and $43,243.59 from government funds. Expenditures to date have amounted to $98,018.65 of which $86,854.55 were state funds and $11,164.10 were government funds. Resident Engineer, Cecil Gall.

Slight alignment changes were made throughout the project, with extra widths cleared and culverts extended. This work is now complete, although final payment is not yet on the books. Elk River gravel was used for surfacing.

Unit 3, Burnt Hill-Chetco River Grading

This project was completed during the previous biennium, and a descriptive article will be found on page 278 of the last report.

The only entries during the present biennium cover a payment of $3,543.58, to the contractor and a reimbursement of $5,600 from the county. The total expenditures now amount to $248,684.66 consisting of $139,260.88 from state funds, $5,600 from county funds, and $103,823.78 from government funds.

Hunters Creek Bridge

On the Roosevelt Coast Highway 2.1 miles south of Gold Beach; one 32-foot, one 60-foot and three 37-foot concrete spans.

Contract No. 983, awarded June 23, 1927, to C. J. Montag Company, of Portland, Oregon. Work commenced September 12, 1927; completed May 10, 1928. Final cost, $26,625.02. Resident Engineer, Frank Moore.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 2,080.79
Credit for gravel used for maintenance purposes Cr.		74.40
Contract items as follows:		
Excavation to plan elevation, 280.5 cu. yds. at $4.50	$ 1,262.25	
Excavation below elevation, 8.9 cu. yds. at $15.00	133.50	
Piling, 873.0 lin. ft. at $1.00	873.00	
Class "A" concrete, 384.24 cu. yds. at $30.00	11,527.20	
Class "D" concrete, 154.82 cu. yds $24.00	3,715.68	
Metal reinforcement, 84,885 lbs. at 5c	4,244.25	
Concrete handrail, 415.0 lin. ft. at $4.00	1,660 00	
Piling cut-off, 468.0 ft. at 15c	70.20	
Gravel fill, 99.2 cu. yds. at 75c	74.40	
Cement adjustment, 17.75 bbls. at $4.85	86.09	
Removal of bridge and maintenance of traffic	1,000.00	
Total amount earned by contractor	$ 24,646.57	
Deduction for removing sheet piling	27.94	
Total amount paid to contractor		24,618.63
Grand total cost of structure, all state funds		$ 26,625.02

SEGREGATION OF FUNDS

Expended 1927-28 biennium	$ 26,277.62
Expended 1929-30 biennium	347.40
Total of expenditures	$ 26,625.02

Rogue River Bridge

Federal Aid Project No. 124-B

On the Roosevelt Coast Highway between Gold Beach and Wedderburn; seven 230-foot reinforced concrete arch spans and 360 feet of reinforced concrete approach with 27-foot clear roadway and two 3½-foot sidewalks.

Contract No. 1148, awarded January 16, 1930, to Mercer-Fraser Co., of Eureka, California. Work commenced May, 1930. Estimated cost, $653,000, of which the state cooperates $264,063.07 and the government $388,936.93; expenditures to date amount to $172,775.83, consisting of $124,084.13 from state funds and $48,691.70 from government funds. Resident Engineer, Marshall Dresser. Inspector, Ivan Merchant.

This will be the largest structure yet built on the State Highway system. It is being constructed according to the Freysinnet system and will be the first structure of this kind built in America. The work is progressing according to schedule. All stream piers and the north approach will be built during the 1930 season. The remainder of the work will be completed in 1931. The contract calls for completion December 31, 1931.

Maintenance

There are 91.44 miles of highways under maintenance in this county comprised of 57.44 miles of oiled macadam, and 34 miles of crushed rock or gravel surfacing.

The maintenance work has been mainly of a routine nature consisting of blading of macadamed roads, cleaning of ditches, removal of slides, cutting and burning weeds, etc. Major slides have been prevented by constructing drainage tunnels, which have proven very effective. During the biennium, 41.79 miles of untreated macadam were oiled.

The maintenance work in this county has been under the supervision of Paul Van Scoy, Resident Maintenance Engineer, with headquarters at Coquille.

A total of $162,492.88 has been expended for general maintenance during the biennium and $27,908.41 for minor betterment work.

Gold Beach-Meyers Creek Resurfacing

On the Roosevelt Coast Highway, from Mile Point 362.0 which point is at the north edge of the town of Gold Beach, south to Mile Point 373.0, which point is near the crossing of Meyers Creek, about 10 miles south of Gold Beach; 11.0 miles of resurfacing. The surfacing was placed 16 feet wide at the rate of approximately 500 cubic yards per mile making a thickness of about 2 inches.

Contract No. 1182, awarded April 24, 1930, to Saxton and Looney, of Port Orford, Oregon. Work commenced May 23, 1930; completed July 18, 1930. Final cost, $24,204.33 from state funds. Resident Engineer, Paul Van Scoy.

This was a light resurfacing which was followed by a surface treatment of Bitumuls.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 947.91
Labor and materials furnished by state:		
Royalty on gravel		701.90
Lease of stock pile sites		153.00
Widening roadbed		19.70
Prepare stock pile sites		611.31
Processing surfacing materials		225.99
Rental on state equipment deducted from contractor's estimate		119.60
Contract items as follows:		
Crushed gravel resurfacing, 5,473.5 cu. yds. at 95c	$ 5,199.83	
1½-inch to 1-inch materials in stock piles, 2,412.2 cu. yds. at 90c	2,170.98	
1-inch to ½-inch materials in stock piles, 3,049.4 cu. yds. at 90c	2,744.46	
½-inch to ⅛-inch materials in stock piles, 3,042.8 cu. yds. at 90c	2,738.52	
Sprinkling, 545 M-Gals. at $2.60	1,417.00	
Earth filler, 1.5 cu. yds. at 50c	.75	
Filler haul, 10.5 yd. mi. at 20c	2.10	
Hauling crushed gravel (truck measure), 21,311 yd. mi. at 17c	3,622.87	
Hauling crushed gravel (pile measure), 20,488.2 yd. mi. at 18c	3,687.88	
Total amount earned by contractor	$ 21,584.39	
Deduction for rental of state-owned equipment	159.47	
Total amount paid to contractor		21,424.92
Grand total cost of project, all state funds, 1929-30		$ 24,204.33

Denmark-Port Orford Survey

This survey was made for an estimate for widening on the Roosevelt Coast Highway between Denmark and Port Orford. The survey included the setting of slope stakes and surveying for additional right of way. There were also two line changes obtained by the survey. The field work was under the direction of Cecil Gall, Resident Engineer, and was carried on during the period from November 25, 1929, to March 27, 1930.

Brush Creek-Mussel Creek Survey

This survey was made to obtain an estimate on replacing the trestle with a fill at the crossing of Brush Creek on the Roosevelt Coast Highway 10 miles south of Port Orford. It entailed the change of some line on either side of the trestle.

Also a survey was run out at Retz Creek, 4 miles south of Port Orford, for a proposed line change and charged to the same account.

The survey was carried on under the direction of Paul Van Scoy, Resident Engineer, and covered a total distance of one-half mile.

Rogue River Bridge Approaches Survey

The original location survey for the approaches to the Rogue River ferry on the Roosevelt Coast Highway at Gold Beach was made by B. O. Johnson prior to 1928. The recent survey by Paul Van Scoy included some revision at the ends of the Rogue River bridge and also was intended to obtain right of way descriptions. While the line is practically complete, there remains some changes to be made in slope stakes, of which all have been set.

Further details will be found on page 275 of the 1927-1928 report.

DESCHUTES COUNTY

This biennium marks the period of greatest activity in this county since The Dalles-California Highway was built. Major projects consisted of the grading of 40.03 miles and the surfacing of 18.00 miles of road on the Central Oregon Highway and the grading of 3.63 miles of the Crooked River Highway in this county.

Minor betterment work consisted of the removal of logs and brush from the right of way on the McKenzie Highway, the widening of roadways in various places, installation of additional culverts and the construction of snow fences.

The highway work in this county has been under the supervision of C. W. Wanzer, Division Engineer, with headquarters at Bend.

Bend-Horse Ridge Surfacing

Federal Aid Project No. 147-A

On the Central Oregon Highway, from Sta. 0+00, which station is located at the east corporate limit of the city of Bend, to Sta. 950+50, which is 18 miles east of the point of beginning; 18.00 miles of surfacing, 20 feet in width and the furnishing of 8,400 cubic yards of maintenance materials.

Contract No. 1184, awarded May 8, 1930 to the J. W. Feak Construction Company, of Portland, Oregon. Work commenced June 24, 1930. Estimated cost, $90,000 consisting of $56,199.28 from state funds and $33,800.72 from government funds. Expenditures to date are $42,660.35 from state funds. Resident Engineers, H. N. Hackett and K. D. Lytle, successively.

The original specifications of this contract called for the surfacing work to be divided into three sections. From Sta. 0+00 to Sta. 422+50, a base course of cinders 6 inches compacted thickness was first to be laid and on top of this cinder base, a 2-inch water-bound macadam wearing surface was to be constructed. From Sta. 422+50 to Sta. 528+00 a cinder base was to be laid 6 inches in depth on top of which a 2-inch wearing surface of pit-run gravel was to be placed. The balance of the road, from Sta. 528+00 to Sta. 950+50 was to be covered with a 2-inch course of pit-run gravel.

The rock quarry from which the crushed rock was secured for use on the first section is located about 500 feet north of Sta. 240+00 and the gravel used on the other sections was taken from a pit 100 feet south of Sta. 791+00. All cinders were taken from land located on the north west slope of Pilot Butte, opposite Sta. 0+00.

After beginning construction of the 2-inch water-bound macadam top on section one, it soon became apparent so thin a mat could not be satisfactorily built on the cinder base. The chief reason for this was due to the quality of rock, the sharp corners of which became broken off, after one or two trips had been made over it with a roller, and consequently the material would not key up. It was accordingly decided to bind this mat with oil, the state to furnish and apply the oil and the contractor agreeing to do all the necessary work involved.

[DESCHUTES]

Pilot Butte-Horse Ridge Regrading

Federal Aid Project No. 147-A

On the Central Oregon Highway, from Sta. 74+73, which station is about 1½ miles east of the city of Bend, to Sta. 639+60; 10.70 miles of regrading, roadway 26 feet wide in fills and 30 in cuts.

Contract No. 1090, awarded April 19, 1929, to Geo. C. Johnson, of Portland, Oregon. Work commenced May 4, 1929; completed December 30, 1929; estimated cost, $76,000. Resident Engineer, H. N. Hackett.

As the surfacing on this section had to be renewed, it was thought best to regrade the road, prior to resurfacing, to conform with present day traffic requirements. The present line, while following the old road closely, has nevertheless resulted in a greatly improved alignment.

It was originally planned to construct the roadbed with an 0.8 foot crown and likewise to construct the fill slopes on a ratio of 5 to 1. However, due to a scarcity of available earth material within the limits of the right-of-way, the roadbed was built to a flat section and the fill slopes were constructed on ratios of 1½ to 1 and 3 to 1, depending upon the depth of the fills. These changes resulted in the final construction quantities being somewhat less than those anticipated under the original plans.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 6,213.61
Labor and materials furnished by state:		
Royalties on borrow materials		271.50
Rebuilding irrigation systems		217.12
Prospecting for surfacing materials		75.70
Clearing up borrow pit		120.00
Signs for traffic control		33.30
Contract items as follows:		
Clearing and grubbing all	$ 3,000.00	
Common excavation, 18,873.1 cu. yds. at 38c	7,171.78	
Common embankment, 70,467.0 cu. yds. at 28c	19,730.76	
Solid rock excavation, 23,994.2 cu. yds. at $1.29	30,952.52	
Overhaul, 56,666 yd. sta. at 7c	3,966.62	
12-inch concrete pipe, 336 lin. ft. at $1.45	487.20	
18-inch concrete pipe, 213 lin. ft. at $2.00	426.00	
24-inch concrete pipe, 63 lin. ft. at $3.50	220.50	
30-inch concrete pipe, 216 lin. ft. at $4.00	864.00	
36-inch concrete pipe, 32 lin. ft. at $5.00	160.00	
Class "A" concrete, 1.85 cu. yds. at $27.00	49.95	
Class "B" concrete, 36.0 cu. yds. at $22.00	792.00	
Class "D" concrete, 8.03 cu. yds. at $22.00	176.66	
Reinforcing steel, 1,297 lbs. at 11c	142.67	
Excavation (concrete slab), 22.53 cu. yds. at $2.00	45.06	
Rubble masonary, 10.14 cu. yds. at $15.00	152.10	
Total amount earned by contractor	$ 68,337.82	
Deduction for final estimate in process of payment	2,048.40	
Total amount paid contractor		66,289.42
Total amount expended on project		$ 73,220.65

PARTICIPATION IN COST

	State	*Government*	*Total*
Expended to date	$ 35,837.65	$ 37,383.00	$ 73,220.65
Estimated balance to complete	Cr. 13,078.33	15,857.68	2,779.35
Estimated total cost	$ 22,759.32	$ 53,240.68	$ 76.000.00

Horse Ridge-Dry River Grading

Federal Aid Project No. 147-B

On the Central Oregon Highway, from Sta. 639+60, which station is about twelve miles east of the city of Bend. The east end of the project is at Sta. 1083+00; 8.40 miles of grading. Fills were built 36 feet in width and cuts were 30 feet wide with standard extra width on all curves.

Contract No. 1131, awarded October 30, 1929, to Henry C. Boyer, of Ontario, Oregon. Work commenced November 30, 1929; completed August 2, 1930. Estimated cost, $60,000, consisting of $20,628.83 from state funds and $39,371.17 from government funds. Expenditures to date consist of $22,719.15 from state funds and $29,086.75 from government funds. Resident Engineer, H. N. Hackett.

The heaviest grading on the Central Oregon Highway between Bend and Burns was encountered on this section, about 2.2 miles of which are located on a 5 per cent grade with heavy curvature. The contractor, with his own forces, did 2.4 miles of this work and the balance was done by four sub-contractors. All of the work was done by teams and fresnos. Although considerable difficulty was experienced in shooting the rock encountered, which consisted of soft lava with many crevices, the job was finished well within the time specified for completion. The Deschutes County Court by resolution secured the right of way, 80 feet in width.

Near the easterly end of this section the highway passes over the summit of the Horse Ridge, the only true summit between Bend and Burns. From this summit a wonderful view of the surrounding country can be had. To the east lies the High Desert and to the west far across the juniper clad plains can be seen the snow capped peaks of the Cascade Range.

Dry River-Millican Grading

Federal Aid Project No. 147-C

On the Central Oregon Highway, from Sta. 1083+00, which station is about 20 miles east of the city of Bend, to Sta. 1442+00, which station is about two and one-half miles east of the Millican Post Office; 6.80 miles of grading. This section was graded to a width of 26 feet in fills and 30 feet in cuts with standard widening on curves. The alignment is very good, there being three curves on the section, the sharpest of which is a 3 degree.

Contract No. 1183 was awarded April 24, 1930, to Johnson Brothers Company of Klamath Falls, Oregon. Work commenced May 7, 1930; completed July 21, 1930. Estimated cost, $30,000 consisting of $12,809.68 from state funds and $17,190.32 from government funds. Expenditures to date consist of $22,481.36 from state funds. Resident Engineer, H. N. Hackett.

The work on this section was all done by the contractor's forces with the exception of the installation of culvert pipes. The furnishing and placing of these were sublet to the Deschutes Concrete Pipe Company of Bend, Oregon. The contractor's force consisted of four tractors, three hydraulic fresnos, a 10-foot road grader and a small team outfit consisting of about 16 horses. All of the grade was roughed in with the machines and the team outfit did the finishing. The machines were worked in two shifts and wonderful progress was made, the contractor completing the project 100 days ahead of the time specified in the contract. The right of way is 80 feet in width and was secured by Deschutes County by resolution.

Units No. 1 and 3, Bear Creek-Millican Grading

On the Crooked River Highway, Unit No. 1 extends from Sta. 128+67.2, which station is at the junction of the Crooked River Highway with the Central Oregon Highway at a point 10.2 miles east of Millican, to Sta. 404+46.6, which station is at the head of Sage Hollow. Unit No. 3 extends from Sta. 570+00, which station is approximately three miles north of the junction of Sage Hen Hollow with Bear Creek, to Sta. 785+00, which station is approximately one mile northwest of the junction of Sage Hollow with Bear Creek; 9.27 miles of grading standard 24-foot roadbed.

Work commenced August 23, 1930; Resident Engineer, J. A. Runge.

This work, being performed by state forces, has progressed in a satisfactory manner. A so-called "desert type section" was used, the roadbed having a width of 24 feet with the entire width of the roadway, including the ditches which have a minimum depth of two feet, being 36 feet. The general foreman in charge of construction was S. N. Weisgerber.

The project is located in both Deschutes and Crook Counties and the right of way, 80 feet in width, was secured by the County Courts of these counties by resolution.

The estimated cost of this work is $25,000 to be paid from state funds.

Hampton-Lake County Line Grading

Federal Aid Project No. 148-B

On the Central Oregon Highway, from Hampton, which is approximately 60 miles east of Bend, to Deschutes-Lake County line; 14.128 miles of grading, 26-foot roadbed.

Work commenced May 21, 1929; completed December 15, 1929. Final cost, $21,590.49, consisting of $8,590.49 from state funds and $13,000 from government funds. Expenditures to date consist of $10,064.69 from state funds and $11,525.80 from government funds. Resident Engineer, J. A. Runge.

All of the work on this section was done by state forces with tractors, hydraulic fresnos and road graders except the culvert pipe which was furnished and installed by the Concrete Pipe Company, of Bend, Oregon. The grading, being light, was ideal work for the type of equipment used, the section being graded to a 26-foot roadbed that was constructed to what is termed a grader section.

The project was practically finished by the middle of July but the soil was so light that the finishing could not be done until after the rainy season started. The alignment is very good on this section, there being only four curves, the maximum being a 4 degree. Right of way, 80 feet in width, was secured by Deschutes County by resolution.

Central Oregon Canal Bridge

Federal Aid Project No. 147-A

On the Central Oregon Highway 8 miles east of Bend, two 27-foot continuous concrete spans with 24-foot clear roadway.

Contract No. 1094, awarded May 23, 1929, to R. K. Krausse, of Portland, Oregon. Work commenced July 1, 1929; completed November 10, 1929. Final cost, $5,704.46. Resident Engineer, C. K. Hubbard.

This bridge replaces a timber trestle 8 miles east of Bend on the Central Oregon Highway. It is part of the construction project between Bend and Horse Ridge.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 625.42
Name plates furnished by the state		21.52
Contract items as follows:		
Excavation, 43.33 cu. yds. at $10.00	$ 433.30	
Class "A" concrete, 43.03 cu. yds. at $30.00	1,290.90	
Class "D" concrete, 36.61 cu. yds. at $28.00	1,025.08	
Metal reinforcement, 22,409 lbs. at 6.75c	1,512.61	
Concrete handrail, 123.0 lin. ft. at $5.00	615.00	
Removal of old bridge and maintenance of traffic	100.00	
Placing 24 anchors in footings, force account	89.63	
Total amount earned by contractor	$ 5,066.52	
Deduction for cement correction	9.00	
Total amount paid to contractor		5,057.52
Grand total cost of structure, 1929-30		$ 5,704.46

PARTICIPATION IN COST

	State	*Government*	*Total*
Expended to date	$ 3,031.29	$ 2,673.17	$ 5,704.46
Extimated cost to complete	Cr. 292.55	292.55	
Estimated total cost	$ 2,738.74	$ 2,965.72	$ 5,704.46

Maintenance

There has been a total of 183.67 miles of state highways under maintenance in this county during the past two years, consisting of 57.02 miles of unsurfaced roadway, 18.74 miles of untreated macadam, and 107.91 miles of oiled macadam.

The maintenance on the surfaced roads consisted of blading, cleaning ditches and removal of snow. On the oiled sections the maintenance consisted of reoiling, patching, cleaning of ditches and snow removal. Due to the lack of thickness of the original surfacing and to faulty drainage through irrigated sections of the country, a considerable portion of the oiled sections require reshaping and reoiling each year. Fortunately, on most sections where it is necessary to reoil, gravel deposits are found close by and the use of this pit-run material considerably reduces the cost of this reoiling work. During the biennium 105.75 miles of oiled macadam were reoiled.

Mr. W. S. Hodge, Resident Maintenance Engineer, stationed at Redmond, has been in charge of all maintenance work in this county.

General maintenance expenditures in the county during the biennium were $141,433.66, and minor betterment expenditures were $4,061.98.

Bend-Sage Hen Hill Survey

The original survey of this entire line was made in 1927 by C. R. Burns, but as the line was studied by the various department engineers, it was seen that considerable improvements in the alignment could be made. One section involved in the realignment survey extended from about 3 miles west of Millican to about 3 miles east of Millican, the total length being 5.84 miles. The second section extended from Gap Ranch in Harney County to about 1,000 feet east of Sage Hen Hill summit, a total length of 22.65 miles. These two sections were surveyed with the result that far better alignment was secured. On the 28 miles relocated there are only 7 curves, the maximum being a 6 degree. On the 22.65 mile revision the line as located is only 240 feet longer than a straight line between the termini.

The survey was begun February 16, 1930, and completed May 18, 1930. The two sections were under the supervision of Resident Engineers, H. N. Hackett and J. A. Runge, respectively.

Further details will be found on page 289 of the 1927-1928 report.

DOUGLAS COUNTY

Important advances have been made towards completion of the highway system in Douglas County. The Tahkenitch-Gardiner Summit section has been graded and plans for grading the adjacent section north of it will be ready for bids in November or December. This section when constructed, will complete the Roosevelt Coast Highway in Douglas County, except the crossings of the Umpqua River and of Coos Bay. On the Umpqua Highway four sections have been graded and surfacing has been started on a ten-mile section west from Drain. The Scottsburg Bridge, a much appreciated improvement, has been finished, replacing the old time ferry. The work on this highway has been financed by Umpqua Improvement District funds, Douglas County funds, and Federal Aid funds.

All state work on the Pacific Highway south of Roseburg and on the Coos Bay-Roseburg Highway has been carried on under the direction of W. E. Chandler, Division Engineer, with headquarters at Grants Pass. All other state highway work in the county has been carried on under the direction of J. S. Sawyer and E. A. Collier, successive Division Engineers, with headquarters at Salem.

"L" Street (Reedsport) Section Grading and Surfacing

On the Umpqua Highway, from Sta. 530+00, which station is at the intersection of Winchester Avenue and West Railroad Avenue in the town of Reedsport, to Sta. 554+63.7, which station is at the intersection of "L" Street and 15th Street in Reedsport. 0.47 of a mile of grading 28 foot roadbed and surfacing 20 feet wide with crushed gravel 6 inches thick.

Contract No. 1124, awarded September 26, 1929, to Liesch and Tofte, of Marshfield, Oregon. Work commenced October 10, 1929; completed January 2, 1930. Final cost, $8,141.07. Resident engineer, G. E. Roberts.

This short section, undertaken at the request of the Umpqua Highway Improvement District, extends through the town of Reedsport to complete a connection of the Umpqua Highway with the Roosevelt Coast Highway.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 255.90
Improving railroad crossing in city of Reedsport		125.00
Contract items as follows:		
Clearing and grubbing, all	$ 250.00	
Excavation, single classification, 4,643.1 cu. yds. at 55c	2,553.71	
18-inch concrete pipe, 72 lin. ft. at $2.30	165.60	
Sub-base course surfacing, 573 cu. yds. at $2.35	1,346.55	
Base course surfacing, 382 cu. yds. at $2.35	897.70	
Top course surfacing, 978 cu. yds. at $2.35	2,298.30	
Earth filler, 108 cu. yds. at 40c	43.20	
Filler haul, 34 yd. mi. at 20c	10.80	
Salvaging existing surfacing material, force account	194.31	
Total amount paid to contractor		7,760.17
Grand total cost of project, 1929-30		$ 8,141.07

PARTICIPATION IN COST

	State	*District*	*Total*
Total expended to date	Cr. $ 181.93	$ 8,323.00	$ 8,141.07
Estimated balances to complete	181.93	Cr. 181.93	
Estimated total cost	$	$ 8,141.07	$ 8,141.07

[DOUGLAS]

Reedsport-Lakeside Surfacing

Federal Aid Project Nos. 128-A & B

On the Roosevelt Coast highway, from Sta. 476+30, which station is at the south corporate limit of the town of Reedsport, to Sta. 72+00 which station is at the junction of the Roosevelt Coast Highway with the branch road to Lakeside. 11.32 miles of crushed gravel surfacing of two types; from Sta. 476+30, the north end of project, to Sta. 190+00, which station is 1.6 miles south of Winchester Bay, in three courses; Sub-base 4 inches thick, base 4 inches thick, top 4 inches thick; from Sta. 190+00 to Sta. 72+00, in two courses: Base 4 inches thick, and top 4 inches thick.

Contract No. 985 was awarded July 28, 1927, to F. J. Kernan of Reedsport, Oregon. Work commenced September 12, 1927; completed November 28, 1928. Final cost $110,695.06. Resident Engineer, P. P. Whitmore.

A complete detailed description of this project will be found on pages 291 and 292 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 5,716.23
Salvaged lumber sold to contractor		200.00
Paving bridge deck		167.58
Constructing culverts		38.10
Maintaining completed portions of roadway		12.70
Widening roadbed		363.54
Constructing temporary plank surface		235.21
Signs and barricades for traffic control		70.66
Clearing and stripping filler pit		29.13
Contract items as follows:		
Sub-base course surfacing, 10,964 cu. yds. at $2.64	$ 28,944.96	
Base course surfacing, 10,012.75 cu. yds. at $2.64	26,433.66	
Top course surfacing, 12,454.5 cu. yds. at $2.64	32,879.88	
Base course materials at site No. 1, 700 cu. yds. at $2.48	1,736.00	
Top course materials at site No. 1, 2,519.5 cu. yds. at $2.48	6,248.36	
Base course materials at site No. 2, 299.75 cu. yds. at $2.56	767.36	
Top course materials at site No. 2, 1,002 cu. yds. at $2.56	2,565.12	
Base course materials at site No. 3, 411 cu. yds. at $2.37	974.07	
Top course materials at site No. 3, 405 cu. yds. at $2.37	959.85	
Base course materials at site No. 4, 624 cu. yds. at $2.37	1,478.88	
Top course materials at site No. 4, 622.5 cu. yds. at $2.37	1,475.33	
Filler, 3,248 cu. yds. at 30c	974.40	
Filler haul, 5,245.25 cu. yds. at 19c	996.60	
Extra allowance for taking filler material from inside of curve, 802.5 cu. yds. at 10c	80.25	
Force account items as follows:		
Preparing stock pile sites	127.56	
Backfilling gravel in tile drains	9.43	
Construction and salvaging temporary plank surfacing	249.20	
Extra work to facilitate winter travel	925.33	
Clearing filler pit site	45.50	
Spreading gravel dumped to facilitate travel previous winter	191.67	
Total amount earned by contractor	$108,063.41	
Deductions:		
Salvaged lumber sold to contractor, 20M—FBM at $10	200.00	
Royalty on gravel, 40,015 cu. yds. at 10c	4,001.50	
Total amount paid contractor		103,861.91
Grand total cost of project		$110,695.06

PARTICIPATION IN COST

	State	*County*	*Government*	*Total*
Expended 1927-28 biennium	$ 74,049.10	$ 2,000.00	$ 10,877.19	$ 86,926.29
Expended 1929-30 biennium	Cr. 6,047.83	9,401.37	20,415.23	23,768.77
Total amount expended	$ 68,001.27	$ 11,401.37	$ 31,292.42	$110,695.06

Reedsport Section Surfacing

Federal Aid Project No. 128-C

On the Roosevelt Coast Highway, from Sta. 476+15, which station is at the south corporate limits of the town of Reedsport, north to station 532+10, which station is approximately 200 feet north of the intersection of Winchester Avenue and West Railroad Avenue in Reedsport, 1.06 miles of crushed gravel surfacing laid in four courses; two courses of sub-base material each 3½ inches thick, one course of base material 3 inches thick and one course of top material 2 inches thick, 18 feet wide and trenched.

Contract No. 1,050, awarded August 14, 1928, to F. J. Kernan, of Reedsport, Oregon. Work commenced September 11, 1928; completed October 20, 1928, Resident Engineer, P. P. Whitmore.

This project was opened during the past biennium only to record the payment of $5,680.27 from the government. This makes the final cost amount to $10,133.45, of which $4,453.18 was expended from state funds and $5,680.27 from government funds.

Further details will be found on page 290 of the 1927-28 report.

Red Bridge-Drain Surfacing

Federal Aid Project No. 142-B

On the Umpqua Highway, from the Red Bridge crossing of Elk Creek, Sta. 1269+48 to the intersection of the Umpqua Highway with the Pacific Highway in the town of Drain, Sta. 1806+00. 10.1 miles of broken stone, water-bound macadam surfacing, 20 feet wide and 9 inches thick, and furnishing broken stone in stock piles.

Contract No. 1195, awarded May 22, 1930, to A. S. Wallace of Roseburg, Oregon. Work commenced June 1, 1930. Estimated cost, $155,000, consisting of $61,891.77 from government funds and the balance to be paid from county and improvement district funds. Resident Engineer, G. E. Roberts.

In addition to the surfacing of this section, work under the contract consists of the stock-piling of broken stone, between Red Bridge and Drain, for use in constructing a bituminous macadam surface and, likewise, the stock-piling of materials at points along the Pacific Highway extending nine miles each way from Drain, these materials being for the construction of a non-skid surface on the asphaltic concrete of that section.

The contractor selected a very good quarry on Billy Creek, about 1½ miles west of Drain, but poor shooting delayed actual production of rock until the latter part of August, 1930. However, good progress has been made subsequent to that time and it is anticipated that, prior to the rainy season, the sub-base will have been laid throughout the section, which will permit travel during the winter without serious inconvenience.

Prospecting for Drain Quarry

A careful search for good rock was made along Elk Creek and its tributaries for ten miles west of Drain. Two locations on Billy Creek were prospected by sinking shafts and making cuts. An option was secured on the old Warren Quarry at Drain. The contractor on the surfacing selected a site on Rock Creek, a branch of Billy Creek, where a good quality of hard rock was located.

Tahkenitch-Gardiner Summit Grading

Federal Aid Project No. 140-B

On the Roosevelt Coast Highway, from Sta. 1007+00, which station is immediately south of the crossing of the Tahkenitch River and 7.6 miles north of the town of Gardiner, to Sta. 839+70, which station is about 4.4 miles north of the town of Gardiner; 3.17 miles of grading, 24-foot roadbed.

Contract No. 1168, awarded March 27, 1930, to A. C. Greenwood, of Portland, Oregon. Work commenced April 8, 1930. Estimated cost, $214,000, consisting of $146,709.51 from state funds, $8,106.90 from county funds and $59,183.59 from government funds. Expenditures to date have been $106,686.51 from state funds. Resident Engineer, E. M. Booth.

This section extends from the Gardiner Summit section, completed during the previous biennium, northward through a dense forest of virgin spruce timber, to Tahkenitch Lake. The country traversed is very rugged resulting in the grading encountered being of an extremely heavy nature.

During construction, sliding of the fills has occurred at some points where the embankments were built on steep rock slopes, the trouble being caused, mainly, by the presence of seepage water in the bed-rock. The removal of this water has been accomplished by the installation of perforated iron drain pipe under the fills at the points affected.

Progress has been very good and it is contemplated that the work will be completed by the specified date of completion, July 31, 1931.

Gardiner Summit Section Grading

Federal Aid Project No. 140-A

On the Roosevelt Coast Highway, from Sta. 736+10, which station is approximately two miles north of the town of Gardiner, north to Sta. 839+79, which station is 0.44 mile south of the Siuslaw National Forest Boundary, 1.95 miles of grading, class "A" 30-foot standard roadbed.

Contract No. 1,035, awarded April 28, 1928, to E. L. Gates, of Lakeside, Oregon. Work commenced April 29, 1928; completed September 11, 1928. Final cost, $85,961.84. Resident Engineer, Glenn E. Roberts.

This project was opened during the past biennium only to record the receipt of $11,411.18 from the county, and $11,519.61 from the government. The final cost now amounts to $85,961.84, of which $16,656.17 has been expended from state funds, $32,814.72 from county funds, and $36,490.95 from government funds.

Further details will be found on page 293 of the 1927-28 report.

Reedsport Section Grading

Federal Aid Project No. 128-B

On the Roosevelt Coast Highway, from Sta. 476+15, which station is at the south corporate limits of Reedsport, north to Sta. 532+10, which station is approximately 200 feet north of the intersection of Winchester avenue with West Railroad avenue in Reedsport. 1.06 miles of grading, class "A" 30-foot standard roadbed.

Contract No. 1,046, awarded July 10, 1928, to Frank M. Bullis, of Corvallis, Oregon. Work commenced August 13, 1928; completed October 6, 1928. Resident Engineer, P. P. Whitmore.

This project was opened during the past biennium only to record the receipt of $5,988.33 from the government. The total cost of the project amounts to $9,677.34 of which $189.01 was expended from state funds, $3,500 from county funds, and $5,988.33 from government funds.

Further details will be found on page 292 of the 1927-28 report.

Reedsport-Winchester Bay Grading

Federal Aid Project No. 128-A

On the Roosevelt Coast Highway, from Sta. 476+30, which station is at the south corporate limits of Reedsport, south to Sta. 291+00, which station is in the town of Winchester Bay. 3.29 miles of grading, of class "A" 24-foot standard roadbed.

Contract No. 891, awarded June 24, 1926, to Schell and Rhodes, of Oakland, Oregon. Work commenced August 1, 1926; completed December 3, 1927. Resident Engineer, P. P. Whitmore.

This project was opened during the past biennium only to record the receipt of $9,920.93 from the government. The final cost now amounts to $95,879.49, consisting of $19,389.49 from state funds, $26,000 from county funds, and $50,490 from government funds.

Further details will be found on page 296 of the 1927-28 report.

Winchester Bay-Lakeside Grading

Federal Aid Project No. 128-B

On the Roosevelt Coast Highway, from Sta. 291 at the north edge of the town of Winchester Bay, south to station 130, approximately 1.5 miles north of Lakeside, being 5.57 miles in Douglas County and 1.35 miles in Coos County. 6.92 miles of grading, class "A" roadbed.

Contract No. 922, awarded September 28, 1926, to E. L. Gates, of Foster, Oregon. Work commenced November 1, 1926; completed June 15, 1927. Resident Engineer, P. P. Whitmore.

This project was opened during the past biennium only to record the receipt of $20,929.48 from the government and $14,000 from the county. The final cost of the project now amounts to $230,042.12 of which a total of $35,097.08 was expended from state funds, $64,411.09 from county funds and $130,533.95 from government funds.

Further details will be found on page 294 of the 1927-28 report.

Approaches to Scottsburg Bridge Grading

Federal Aid Project No. PR 142-A

On the Umpqua Highway, from Sta. 0-36.7, which station is about 0.07 miles west of the west end of the Scottsburg Bridge east to Sta. 45+00, which is 0.62 miles east of the east end of the Scottsburg Bridge; 0.86 miles of grading.

Contract No. 1098 was awarded June 27, 1929, to Johnson and Company of Scottsburg, Oregon. Work commenced July 8, 1929; completed November 2, 1929; final cost, $20,453.42. Resident Engineer, G. E. Roberts.

Together with the construction of the Scottsburg Bridge, the completion of the roadway approaches to it marked the elimination of the old-time ferry across the Umpqua River at that point, and resulted in a much-needed and highly appreciated improvement. The length of new work, including the bridge is 0.86 miles, but the present road was widened and straightened at the west end of the project, for a distance of 0.07 miles, this work being done for the purpose of obtaining materials to construct the embankment at the west end of the bridge.

Payment for this work was made from County and Improvement District funds and from Federal Aid funds.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,430.17
Contracts items as follows:		
Clearing and grubbing, all	$ 1,000.00	
Common excavation, 8,403.3 cu. yds. at 38c	3,193.25	
Intermediate excavation, 11,926.7 cu. yds. at 54c	6,440.42	
Solid rock excavation, 4,787.4 cu. yds. at 80c	3,829.92	
Overhaul, 21,458 yd. sta. at 2c	429.16	
Truck haul, 3,569.7 yd. mi. at 20c	713.94	
18-inch concrete pipe, 333 lin. ft. at $3.00	999.00	
6-inch porous drain tile, 110 lin. ft. at 30c	33.00	
Rock backfill for drains, 14.9 cu. yds. at $1.00	14.90	
Bar run gravel, 2,138 cu. yds. at $1.00	2,138.00	
Relaying private water pipe lines, force account	231.66	
Total amount paid to contractor		19,023.25
Grand total cost of project		$ 20,453.42

PARTICIPATION IN COST

	State	*County*	*Government*	*Total*
Total expended to date	$ 12,561.59	$ 7,891.83	$	$ 20,345.25
Estimated balances to complete	Cr. 12,561.59		12,561.59	
Estimated total cost	$	$ 7,891.83	$ 12,561.59	$ 20,453.42

Scottsburg-Burchard Creek Grading

Federal Aid Project No. 142-C

On the Umpqua Highway, from Sta. 45+00, which station is about one-quarter mile east of Scottsburg, to Sta. 285+00, which station is about 4.5 miles east of Scottsburg; 4.43 miles of grading, 28 foot roadbed.

Contract No. 1169, awarded March 27, 1930, to Harmon and Tittle, of Eugene, Oregon. Work commenced April 10, 1930. Estimated cost, $116,000, consisting of $64,934.51 from government funds and the remainder from county and improvement district funds. Resident Engineer, G. E. Roberts.

This section is located along the north bank of the Umpqua River, extending from the east end of the Scottsburg Bridge section to Burchard Creek. Construction operations began in April, 1930, but due to inadequate equipment progress has been slow and the work will not be completed before the spring of 1931. Considerable over-run of excavation quantities has resulted on this work, due to the nature of the soil, which has proved less stable than anticipated. This condition has resulted in the cuts requiring flatter slopes than originally planned which has, accordingly, increased the quantities of materials to be removed.

In addition to the grading of the section, the contract covering the work contemplates the placing of a temporary surface, to consist of 2½ inch minus screened gravel.

Red Bridge-Drain Grading

Federal Aid Project No. 142-B

On the Umpqua Highway, from Sta. 1269+48, which station is about six miles east of the town of Elkton, to Sta. 1806+00, which station is in the town of Drain at the junction of the Umpqua Highway with the Pacific Highway; 10.10 miles of grading, 28 foot roadbed.

Contract No. 1107, awarded July 25, 1929 to Peck and Einerson, of Hoquiam, Washington. Work commenced August 21, 1929. Estimated cost, $180,000, consisting of $109,338.60 from government funds and the balance to be paid from county and improvement district funds. Resident Engineer, G. E. Roberts.

This section, which extends down Elk Creek to within 0.25 mile of the proposed Handcock Tunnel, is the first unit of the Umpqua Highway to be built west of Drain. No unusual difficulties have been encountered with the exception of a point just west of Hardscrabble Creek, where a boulder and clay slide developed during construction. To remedy this situation, the grade was raised five feet and widened and the slide was sloped back on a one and one-half to one ratio. Some movement of the slide has continued, however, and it is quite possible that further work will be required at this point.

Canyon Creek Bridge

Federal Aid Project No. 61-B (Reopened)

On the Pacific Highway at Deer Park Inn, 3.69 miles south of Canyonville; 30-foot concrete slab with 24-foot clear roadway.

Contract No. 1066, awarded January 29, 1929, to Rigdon Brothers, of Woodburn, Oregon. Work commenced February 9, 1929; completed June 1, 1929. Final cost, $2,849.58. Resident Engineer, R. G. Barnes.

This bridge replaces a timber span at the same site. The existing abutments were used to support the new concrete superstructure.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 632.85
Red reflectors and torches sold to contractor		14.40
Contract items as follows:		
Class "A" concrete, 21.15 cu. yds. at $22.00	$ 465.30	
Class "D" concrete, 22.33 cu. yds. at $23.00	513.59	
Metal reinforcement, 10,920 lbs. at $4.75	518.70	
Concrete handrail, 80.90 lin. ft. at $5.00	404.50	
Removal of old bridge and maintenance of traffic	300.00	
Force account items:		
Furnish labor and materials for work not shown on bidding plans	34.64	
Total amount earned by contractor	$ 2,236.73	
Deductions:		
Lumber furnished by state. lump sum	20.00	
Red reflectors and Toledo torches	14.40	
Total amount paid to contractor		2,202.33
Grand total cost of bridge, 1929-30		$ 2,849.58

PARTICIPATION IN COST

State	$ 1,417.21
Government	1,432.37
Total	$ 2,849.58

Myrtle Creek Bridge

Federal Aid Project No. 78-A

On the Pacific Highway in the town of Myrtle Creek; two 30-foot and one 60-foot continuous concrete spans, with 27-foot clear roadway and two 3½-foot sidewalks.

Contract No. 1215, awarded July 29, 1930, to Hargreaves & Lindsay, of Eugene, Oregon. Work commenced August 4, 1930. Estimated cost, $14,000, with the government cooperating to the extent of $8,332.09, and the state paying $5,667.91. A total of $9,316.14 has been expended to date from state funds. Resident Engineer, L. C. Smitton.

This bridge is on the Myrtle Creek line revision and eliminates an old narrow steel truss span. In order to improve the alignment at this point an old mill was purchased and torn down to make room for the bridge. This job will be completed about the middle of October, 1930.

Schofield River Bridge

Federal Aid Project No. 128-C

On the Roosevelt Coast Highway at Reedsport; six 19-foot pile trestle spans, one 84-foot retractable I-beam span and six 19-foot pile trestle spans with 25-foot clear roadway and one 3½-foot sidewalk.

Contract No. 1032, awarded March 27, 1928, to O. M. Olds, of Oak Grove, Oregon. Work commenced April 17, 1928; completed August 30, 1928. Final cost, $24,055.26. Resident Engineer, Frank Moore.

This structure was completed during the preceding biennium but final settlement was not made until this biennium.

Further details will be found on page 298 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,416.65
Surfacing bridge deck		180.61
Labor and material perfecting mechanism of draw span		270.40
Contract items as follows:		
Cedar piling, 4,218.7 lin. ft. at 80c	$ 3,374.96	
Fir piling, 2,069 lin. ft. at 73c	1,510.37	
Piling cut-off, cedar, 72.1 lin. ft. at 29c	20.91	
Piling cut-off, fir, 329 lin. ft. at 11c	36.19	
Cedar lumber, 74.271 M-FBM at $60.00	4,456.26	
Trestle superstructure, 273.8 lin. ft. at $16.00	4,380.80	
Structural steel, 63,805 lbs. at 6c	3,828.30	
Allowance for increased cost of deck, 76.12 M-FBM at $6.75	513.81	
Removal of old bridge and maintenance of traffic	4,000.00	
Force account items:		
Cut and drill bed plates for steel stringers	16.70	
Drill beams to bolt decking and cut strut angles to clear rollers	13.86	
Edge-spiking on decking of steel span	35.44	
Total amount paid to contractor		22,187.60
Grand total cost of structure		$ 24,055.26

PARTICIPATION IN COST

	State	County	Government	Total
Expended 1927-28 biennium	$ 3,675.77	$ 6,500.00	$ 10,941.94	$ 21,117.71
Expended 1929-30 biennium	1,407.35		1,530.20	2,937.55
Total of expenditures	$ 5,083.12	$ 6,500.00	$ 12,472.14	$ 24,055.26

Scottsburg Bridge

Federal Aid Project No. 142-A

On the Drain-Reedsport Road over the Umpqua River at Scottsburg; 632-foot continuous steel truss, four 30-foot concrete approach spans, with 24-foot clear roadway.

Contract No. 1042, awarded May 29, 1928, to Clackamas Construction Company, of Portland, Oregon. Work commenced June 12, 1928; completed November 1, 1929. Final cost, $114,936.52. Resident Engineer, C. A. Jordan.

This is the largest and most expensive structure on the Umpqua Highway. The bridge was financed by cooperative agreement between the Bureau of Public Roads, the Umpqua Highway Improvement District and Douglas County. It replaces a small ferry which was inadequate after the opening of the highway between Reedsport and Coos Bay.

Further details will be found on page 297 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 7,093.78
Name plates		28.00
Rental on state equipment, deducted from contractor's estimate		50.00
Contract items as follows:		
Excavation, 780.8 cu. yds. at $6.00	$ 4,684.80	
Excavation below elevation shown, 224.86 cu. yds. at $10.00	2,248.60	
Metal reinforcement, 198,887.7 lbs. at 5c	9,944.39	
Class "A" concrete, 291.91 cu. yds. at $20.00	5,838.20	
Class "B" concrete, 591.09 cu. yds. at $25.00	14,777.25	
Class "D" concrete, 506.51 cu. yds. at $18.00	9,117.18	
Structural steel, 889,632 lbs. at 6c	53,377.92	
Reinforced concrete handrail, 373.8 lin. ft. at $4.00	1,495.20	
Cement adjustment, deduction 54 bbls. at $3.09 Cr.	166.86	
Drive test piling (bents 5 & 6), cast and drive concrete footing piles (bents 4, 5 & 6) and rebend column steel (bent 3), force account	3,349.57	
Added Bent:		
Excavation, 125.68 cu. yds. at $6.00	754.08	
Excavation below elevation shown, .91 cu. yds. at $10.00	9.10	
Metal reinforcement, 13,434.0 lbs. at 5c	671.70	
Class "A" concrete, 45.76 cu. yds. at $20.00	915.20	
Class "D" concrete, 22.4 cu. yds. at $18.00	403.20	
Reinforced concrete handrail, 60 lin. ft. at $4.00	240.00	
Cement adjustment, deduction 11 bbls. at $3.09 Cr.	33.99	
Wreck concrete caps and build different forms and cut off reinforcing steel and construct sliding joint, force account	189.20	
Total amount earned by contractor	$107,814.74	
Deduction for rental of jacks	50.00	
Total amount paid to contractor		107,764.74
Grand total cost of structure		$114,936.52

PARTICIPATION IN COST

	State	*County*	*Government*	*Total*
Expended 1927-28 biennium	Cr.$ 29,913.11	$ 45,000.00	$........	$ 15,086.89
Expended 1929-30 biennium	39,883.79	1,992.64	57,973.20	99,849.63
Expenditures to date	$ 9,970.68	$ 46,992.64	$ 57,973.20	$114,936.52
Estimated cost to complete	Cr. 9,970.68	....	9,970.68	....
Estimated total cost	$........	$ 46,992.64	$ 67,943.88	$114,936.52

Wells, Golden and Burchard Creek Bridges

Federal Aid Project No. 142-C

On the Drain-Reedsport Road between Scottsburg and Burchard Creek.

Contract No. 1175, awarded March 27, 1930, to C. A. Catching, of Roseburg, Oregon. Work commenced March 10, 1930; completed September 1, 1930; estimated cost, $24,000. Resident Engineer, L. C. Smitton.

The bridge over Wells Creek consists of two 45-foot and one 60-foot continuous concrete spans with 24-foot clear roadway. The bridge over Burchard Creek is an 8 by 8-foot concrete box culvert. The bridge over Golden Creek is a 6 by 6-foot concrete box culvert. The work on this contract was financed by cooperative agreement between the Bureau of Public Roads, the Umpqua Highway Improvement District and Douglas County. All of the work is completed but final settlement has not been made.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 773.36
Contract items as follows:		
Wells Creek Bridge:		
Excavation, 597.7 cu. yds. at $1.50	$ 896.55	
Class "A" concrete, 245.04 cu. yds. at $21.00	5,145.84	
Class "D" concrete, 101.48 cu. yds. at $21.00	2,131.08	
Metal reinforcement, 70,659 lbs. at 5c	3,532.95	
Concrete handrail, 312.2 lin. ft. at $5.00	1,561.00	
Removal of old bridge and maintenance of traffic	1,000.00	
Force account items:		
Constructing temporary office for engineer	93.45	
Constructing temporary guard fence	23.54	
Golden Creek Bridge:		
Excavation, 437.25 cu. yds. at $1.00	437.25	
Class "A" concrete, 133.04 cu. yds. at $16.00	2,128.64	
Metal reinforcement, 19,898 lbs. at 5c	994.90	
Force account item:		
Strengthening old bridge used as detour	28.10	
Burchard Creek Bridge:		
Excavation, 353.56 cu. yds. at $2.00	707.12	
Class "A" concrete, 188.45 cu. yds. at $18.00	3,392.10	
Metal reinforcement, 25,284 lbs. at 5c	1,264.20	
Force account item:		
Strengthening old bridge and maintaining traffic	38.74	
Total amount earned by contractor	$ 23,375.46	
Deductions:		
Cement adjustment	158.90	
Final estimate in process of payment	2,481.95	
Total amount paid to contractor		20,734.61
Grand total expended on bridges		$ 21,507.97

PARTICIPATION IN COST

	State	*County*	*Government*	*Total*
Expended to date	$ 11,507.97	$ 10,000.00		$ 21,507.97
Estimated cost to complete	Cr. 12,636.98		15,129.01	2,492.03
Estimated total cost	Cr. $ 1,129.01	$ 10,000.00	$ 15,129.01	$ 24,000.00

Jack Creek and Hardscrabble Creek Bridges

Federal Aid Project No. 142-B

On the Drain-Reedsport Road between Drain and Red Bridge.

Contract No. 1109, awarded July 25, 1929, to C. A. Catching, of Roseburg, Oregon. Work commenced August 1, 1929; completed December 13, 1929. Final cost, $12,710.87. Resident Engineer, C. A. Jordan.

The bridge over Jack Creek consists of two 26-foot continuous concrete spans with 24-foot clear roadway. The bridge over Hardscrabble Creek consists of two 26-foot and one 36-foot continuous concrete spans with 24-foot clear roadway. An old dam on the bridge site was demolished in order to improve conditions. Both of these bridges replace obsolete timber structures and were financed by cooperative agreement between the Bureau of Public Roads, the Umpqua Highway Improvement District and Douglas County.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,108.97
Name plates		42.47
Contract items as follows:		
Hardscrabble Creek:		
Excavation, 60.01 cu. yds. at $2.00	$ 120.02	
Excavation below elevation, 2.31 cu. yds. at $2.00	4.62	
Class "A" concrete, 81.09 cu. yds. at $23.00	1,865.07	
Class "D" concrete, 59.72 cu. yds. at $23.00	1,373.56	
Metal reinforcement, 31,631.7 lbs. at 5c	1,591.59	
Concrete handrail, 186.35 lin. ft. at $5.00	931.75	
Removal of old structure and maintenance of traffic, lump sum	300.00	
Cement adjustment	28.05	
Force account items as follows:		
Build approaches to bridge	109.32	
Deck drains	65.53	
Total for Hardscrabble Creek	$ 6,389.51	
Jack Creek:		
Excavation, 107.49 cu. yds. at $1.50	161.24	
Excavation below elevation, 31.4 cu. yds. at $10.00	314.00	
Class "A" concrete, 62.44 cu. yds. at $23.00	1,436.12	
Class "D" concrete, 35.43 cu. yds. at $23.00	814.89	
Metal reinforcement, 20,035.3 lbs. at 5c	1,001.77	
Concrete handrail, 115.66 lin. ft. at $5.00	578.30	
Channel excavation, 812.07 cu. yds. at 50c	406.04	
Removal of old structure and maintenance of traffic, lump sum	25.00	
Cement adjustment	9.05	
Force account items as follows:		
Driving piling under footings	314.18	
Building approaches to bridge	109.33	
Total for Jack Creek	$ 5,169.92	
Total amount paid to contractor		11,559.43
Grand total cost of project, 1929-30		$ 12,710.87

PARTICIPATION IN COST

	State	*County*	*Government*	*Total*
Expenditures to date	$ 1,144.29	$ 5,000.00	$ 6,566.58	$ 12,710.87
Estimated cost to complete	Cr. 1,075.17		1,075.17	
Estimated total cost	$ 69.12	$ 5,000.00	$ 7,641.75	$ 12,710.87

Maintenance

The state highways under maintenance in Douglas County comprise a total of 141.22 miles consisting of 79.58 miles of bituminous pavement, 17.14 miles of concrete pavement, 39.32 miles of oiled macadam, 1.95 miles untreated macadam and 3.23 miles of earth road.

During this biennium all improved state highways in Douglas County and the improved sections of the Umpqua Highway were maintained by state forces. This work consisted of general maintenance of roadbed, right-of-way, drainage structures and guard fences, the oiling of 24.32 miles of untreated macadam, and the reoiling of 2.44 miles of oiled macadam. The maintenance costs incurred on the Umpqua Highway were paid from Umpqua Improvement District funds and Douglas County funds.

Maintenance work in this county is divided at Roseburg between Divisions 2 and 3. The Pacific Highway north of Roseburg, the Roosevelt Coast Highway and the Umpqua Highway are maintained under the direction of E. A. Collier, Division Engineer, Salem, Oregon, and Raymond Walsh, Resident Maintenance Engineer, Eugene, Oregon. The Pacific Highway south of Roseburg and the Coos Bay-Roseburg Highway are maintained under the supervision of W. E. Chandler, Division Engineer, Grants Pass, Oregon, and W. H. Strohmeyer, Resident Maintenance Engineer, Roseburg, Oregon.

General maintenance expenditures in the county during the biennium were $176,977.69, and minor betterment expenditures were $42,367.31.

Comstock Overcrossing Survey

The Comstock Overcrossing has been the scene of many accidents, and the wooden approaches will require replacing soon. To improve conditions, a survey was made involving 1.8 miles of new line with an undercrossing a mile north of the present overcrossing. Besides the very sharp curve on the structure itself, the Pacific Highway has numerous sharp curves and grades along this section, while the new survey has only three curves, two six degree and one one degree, and a maximum 2 per cent grade. Another plan proposed is to use the present concrete structure with new approaches on much easier curve. Decision on construction has not been made.

Hollis W. Libby, Resident Engineer, made the survey and projection during the period from June 17, 1929, to July 24, 1930.

Lane County Line-Gardiner Summit Survey

The relocation survey described in the last report was practically finished in January, 1929. During the first three weeks in March, 1930, a small party under the direction of Glenn E. Roberts, Resident Engineer, brushed out a good trail and restaked the line from Gardiner Summit north to Tahkenitch Outlet in preparation for a contract. During July, August and September, 1930, as the resident party on construction had time, they brushed out a good trail and restaked from Tahkenitch Outlet north of the Lane County line. They also made some section ties and a few changes in line and completed the plans for this section.

The work was handled by E. M. Booth, Resident Engineer, subsequent to March, 1930. The entire relocation survey covered a distance of 9.41 miles. The section from Tahkenitch Outlet to Gardiner Summit was placed under contract in March, 1930. The remaining portion north to the Lane County line is planned for construction as a Forest Road Project, bids for which will be received by the Bureau of Public Roads in the very near future.

Further details will be found on page 302 of the 1927-28 report.

Highway Connection at Reedsport Survey

At the request of the Umpqua Highway Improvement District, a location survey was made of a section of the Umpqua Highway connecting "L" Street in Reedsport with the Roosevelt Highway west of the Southern Pacific railroad. This survey used the new grade crossing location authorized by the Public Service Commission.

Glenn E. Roberts was Resident Engineer on the location survey and later supervised the construction of the same section. The survey was begun August 9, 1929, and was completed August 29, 1929, covering a total length of 0.57 mile.

Scottsburg-Drain Survey

Subsequent to the location survey made in 1927 on the Scottsburg-Drain unit of the Umpqua Highway, engineering parties retraced three sections of the line preparatory to the letting of contracts. Several minor changes were made that reduced length, did not impair alignment and suited residents better. The three sections involved included the approaches to the Scottsburg Bridge, 0.86 miles, Red Bridge-Drain section, 10.10 miles, and Scottsburg-Burchard Creek section, 4.43 miles. A few changes were also worked out between Burchard Creek and Long Prairie Schoolhouse.

The field engineering work was under the supervision of Glenn E. Roberts, Resident Engineer, in connection with construction work that was under way during the same period.

Further details will be found on page 301 of the 1927-28 report.

GILLIAM COUNTY

The only work of major importance in this county during the last biennium has been the oiling of the John Day Highway from Condon south to the Wheeler County line. Considerable work has been done in the way of minor betterments along the Columbia River Highway, consisting of widening the roadbed, removing large talus slides from which rocks were continually rolling onto the pavement, widening of roadside ditches and installation of additional culverts.

The state highway work within the county has been under the supervision of C. W. Wanzer, Division Engineer, with headquarters at Bend, excepting approximately one mile of the Columbia River Highway at the east county line and 9.6 miles of the Oregon-Washington Highway, which sections have been under the supervision of H. G. Smith, Division Engineer, located at La Grande.

Maintenance

There are under maintenance in this county, 36.30 miles of oiled macadam on the Columbia River Highway, 51.93 miles of oiled macadam on the John Day Highway and 9.58 miles of oiled macadam on the Oregon-Washington Highway; there are also 0.14 mile of bituminous concrete pavement on the John Day Highway.

The work on the Columbia River Highway is rather extensive due to the many slides and the rapid run-off of snow-water in the spring of each year which always causes considerable damage. In February, 1929, this run-off was so rapid in Blalock Canyon that the culverts became clogged and the water ran over the highway to a depth of 3 feet, stopping all travel for over 24 hours except light cars which were able to detour around through the sand dunes. Every heavy rain brings down tons of material from the steep side hills, thus making the constant patroling of the highway necessary during the winter months. The major part of the John Day Highway runs through a different type of country, and although some washouts are encountered south of Condon, they are infrequent.

A portable patching plant has gone over both highways during the last two years and repaired all holes in the surface of the roads. A part of the John Day Highway, between Arlington and La Grove was reoiled in 1930. Besides the above-described work, general maintenance work was carried on at all times, which consisted of repairs to roadbed, cleaning ditches, painting and repairs to guard fence and the removal of snow. During the biennium, 13.66 miles of untreated macadam were oiled and 13.70 miles of oiled macadam were reoiled.

J. R. Mitchell, Resident Maintenance Engineer, with headquarters at Condon, supervised the maintenance of the John Day Highway and the Columbia River Highway east of Blalock, excepting one mile at the east edge of the county.

K. D. Lytle, Resident Maintenance Engineer, with headquarters located at The Dalles, had charge of the maintenance work on the Columbia River Highway from the John Day River east to Blalock until March, 1930, when the work was taken over by J. N .Bishop.

C. E. Carter, Resident Maintenance Engineer, with headquarters located at Pendleton, has supervised the maintenance work on the Oregon-Washington Highway and on the Columbia River Highway from Heppner Junction to the Morrow County line.

General maintenance expenditures in the county during the past biennium were $85,379.14 and expenditures for minor betterment work were $8,283.09.

Olex-Fossil Maintenance Materials

On the John Day Highway, from Olex to Fossil.

Contract No. 1016, awarded November 29, 1927, to H. E. Schmeer, of Portland, Oregon. Work commenced February 24, 1928; completed September 4, 1928. Final cost, $48,111.50 from state funds. Resident Engineer, A. A. Kirkwood.

Further details will be found on page 304 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 2,453.82
Purchase of quarry site		155.00
Lease of stock pile sites		166.92
Signs for traffic control		16.15
Contract items as follows:		
North Unit:		
Grade "A" materials in stock piles, 2,507.1 cu. yds. at $1.34	$ 3,359.51	
Grade "B" materials in stock piles, 5,453.1 cu. yds. at $1.28	6,979.97	
Grade "C" materials in stock piles, 4,794.4 cu. yds. at $1.03	4,938.23	
Truck haul (stock pile measure), 54,478.0 yd. mi. at 18c	9,806.04	
Grade "A" materials in trucks, 231.0 cu. yds. at $1.24	286.44	
Grade "B" materials in trucks, 73.0 cu. yds. at $1.18	86.14	
Grade "C" materials in trucks, 36.0 cu. yds. at 95c	34.20	
Truck haul (truck measure), 1,186.0 yd. mi. at 16c	189.76	
Force account items:		
Preparing stock pile sites	410.25	
Moving right-of-way fence	45.20	
South Unit:		
Grade "A" material in stock piles, 2,964.7 cu. yds. at $1.19	3,527.99	
Grade "B" materials in stock piles, 4,969.1 cu. yds. at $1.14	5,664.77	
Grade "C" materials in stock piles, 2,692.5 cu. yds. at $1.00	2,692.50	
Truck haul (stock pile measure), 38,337.0 yd. mi. at 18c	6,900.71	
Force account items:		
Preparing stock pile sites	303.40	
Constructing cattle guard	94.50	
Total amount paid to contractor		45,319.61
Grand total cost of project, all state funds		$ 48,111.50

SEGREGATION OF FUNDS

Expended during 1927-28 biennium	$ 46,998.23
Expended during 1929-30 biennium	1,113.27
Total of expenditures	$ 48,111.50

GRANT COUNTY

Grant County is served principally with two state highways, the John Day Highway traversing the entire county east and west along the John Day valley, and the Pendleton-John Day Highway which leads north from the town of John Day, to the north boundary of the county, thence continuing north to an intersection with the Oregon-Washington Highway about 22 miles south of Pendleton. There are also about 1½ miles of the Ochoco Highway within this county, extending from the junction with the John Day Highway just west of Dayville to the Wheeler County line.

On the Pendleton-John Day Highway, the Mountain Rest-Little Beech Creek section, 7.18 miles in length, was graded and surfaced with crushed rock during the biennium. This work marks the completion of the Pendleton-John Day Highway from Long Creek to about 6 miles north of the town of John Day, the section between John Day and Mountain Rest having been previously graded and surfaced by the United States Bureau of Public Roads. The uncompleted portions of this highway consist of approximately a 26-mile section between Long Creek and the north boundary of the county and a six-mile section between John Day and Little Beech Creek. A location survey has been completed on the John Day-Little Beech Creek section and some reconnaissance work has been done between Long Creek and the north county boundary near Dale.

All state highway work in this county on the John Day Highway from Dayville to the Baker County line and on the Pendleton-John Day Highway has been under the supervision and direction of H. G. Smith, Division Engineer, located at La Grande. The work on the John Day Highway from the Wheeler County line to Dayville and on the Ochoco Highway, has been under the supervision and direction of C. W. Wanzer, Division Engineer, located at Bend.

Mountain Rest-Little Beech Creek Surfacing

On the Pendleton-John Day Highway, from Sta. 130 North, which point is one mile north of Mountain Rest Station, to a point near the mouth of Little Beech Creek about five miles northeast of the town of Mt. Vernon; 7.18 miles of crushed rock surfacing 16 feet wide and 9 inches in depth.

Contract No. 1185, awarded April 24, 1930, to the March Construction Company, of Spokane, Washington. Work commenced September 22, 1930. Estimated cost, $48,000 from state funds. Expenditures to date, $3,082.55. Resident Engineer, A. A. Kirkwood.

The contract for surfacing of this section was let in conjunction with two market road projects in Grant County enabling the Grant County Court to secure lower unit prices on the county work as a result of the larger volume of work. The contractor completed the county work first and began placing rock on the state project, September 22, 1930.

Mountain Rest-Little Beech Creek Grading

On the Pendleton-John Day Highway, from Sta. 130 North, which station is one mile north of Mountain Rest Station, to the mouth of Little Beech Creek about five miles northeast of Mt. Vernon; 7.18 miles of grading.

Contract No. 1116, awarded August 29, 1929, to the Morrison-Knudsen Company, of Boise, Idaho. Work commenced October 10, 1929; completed July 3, 1930. Final cost, $99,231.37. Resident Engineer, A. A. Kirkwood.

The grading of this section affords an outlet over improved road for both Fox and Long Creek Valleys, prosperous stock-producing valleys of north central Grant County. Connecting on the north with the Beech Creek-Fox Valley section, constructed by the Bureau of Public Roads, and on the south with the Mt. Vernon-Begg Ranch Market Road, the completion of this grading has closed an important gap on the Pendleton-John Day Highway. The grading was performed by C. A. Baker, subcontractor who used a drag line in his grading operations. A drag line was especially adapted to this particular job inasmuch as numerous channel changes of considerable size were made in the channel of Beech Creek, and the drag line was capable of moving the material in a single operation from the channel change to the roadbed where the material was used in embankment construction.

The improved alignment secured by reason of the channel changes and the ease with which the material was handled, appear to indicate the desirability of channel changing smaller streams rather than crossing or following the meandering of them.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 7,291.78
Prospecting for surfacing materials		76.03
Contract items as follows:		
Clearing and grubbing, all	$ 2,500.00	
Common excavation, 25,904.6 yds. at 29c	7,512.33	
Intermediate excavation, 36,206.2 cu. yds. at 49c	17,741.04	
Solid rock excavation, 51,036.1 cu. yds. at 99c	50,525.74	
Overhaul, 54,464 yd. sta. at 3c	1,633.92	
Class "A" concrete, 4.3 cu. yds. at $30.00	129.00	
Class "B" concrete, 61.9 cu. yds. at $28.00	1,733.20	
Cement rubble masonry, 26.78 cu. yds. at $12.00	321.36	
Riprap, 308.9 cu. yds. at $2.00	617.80	
Lumber and timber, 86.13 M-FBM at $50.00	4,306.50	
18-inch corrugated iron pipe, 1,750.0 lin. ft. at $2.00	3,500.00	
24-inch corrugated iron pipe, 114 lin. ft. at $3.00	342.00	
24-inch corrugated siphon pipe, 48 lin. ft. at $3.50	168.00	
Spreading sub-base materials, 2,085 cu. yds. at 10c	208.50	
Force account items:		
Preparing quarry for inspection by contractors	258.66	
Draining springs in subgrade	179.91	
Developing spring for public use	185.60	
Total amount paid to contractor		91,863.56
Grand total cost of project, all state funds, 1929-30		$ 99,231.37

Beech Creek Forest Road Project

The above project was graded and surfaced under separate contracts, the successful bidder in each instance being J. A. Terteling & Sons of Moscow, Idaho. The project extends from the south end of the Fox Section at the head of Beech Creek, 4.1 miles southerly along Beech Creek. For the most part, the work was the widening of an old county grade, although numerous revisions were made in alignment. Construction began in the fall of 1927 and was completed early in the summer of 1928.

The expenditures during 1929 are for delayed charges only. The total cost of the project is $41,909.99, consisting of $20,000 from state funds and $21,909.99 from government funds.

Further details will be found on page 307 of the 1927-28 report.

Fox Section Forest Road Project

This project is one which was carried over from the previous biennium, and a descriptive article will be found on page 307 of the 1927-28 report. The work was completed in the summer of 1928. The final cost of the project amounted to $111,007.26, of which Grant County paid $54,000 and the government $57,007.26.

Maintenance

At the close of the present biennium there are 122.94 miles of state highway under maintenance in this county. Of this mileage, 115.75 miles are untreated macadam and 7.18 miles are unsurfaced earth road.

The maintenance work has been carried on throughout the biennium by patrol crews stationed at Kimberly, Dayville, John Day, Austin, and Beech Creek, and has consisted of the usual blading of roadbed, cleaning of ditches, removal of snow, etc.

On the John Day Highway, from Dayville to the Baker County line, and on the Pendleton-John Day Highway, the maintenance work has been under the supervision of J. N. Bishop, and W. W. Stiffler, successive Resident Maintenance Engineers, with headquarters at Baker, while J. R. Mitchell, Resident Maintenance Engineer, located at Condon, has been in charge of maintenance on the John Day Highway from Dayville to the Wheeler County line.

General maintenance expenditures in the county during the past biennium have been $85,029.17, and expenditures for minor betterment work, $7,749.01.

Austin Patrol Site and Storage Building

On the John Day Highway 17.5 miles east of Prairie City; 28 by 84-foot maintenance storage building.

Contract No. 1221, awarded August 28, 1930, to R. H. Jones, of Baker, Oregon. Estimated cost, $11,000, from state funds. Resident Engineer, M. Stevenson.

This building will be constructed on a tract of land containing 6.04 acres and situated adjacent to the John Day Highway near Clear Creek approximately 17.5 miles east of Prairie City. The tract was leased from the United States Forest Service for maintenance patrol headquarters. Temporary buildings were constructed for use of the patrolman and helper, and a water system developed.

Forest Boundary-John Day Survey

The location survey between the south boundary of the Malheur National Forest and John Day, made in 1927-28, was extended north a distance of 2.46 miles to connect with the south end of the Beech Creek-Fox Valley section. This extension, together with the north unit of the Forest Boundary-John Day section, has been redesignated the Mountain Rest-Little Beech Creek section and constructed as such.

The field work in connection with this survey was performed during June, 1929, and was under the supervision of W. C. Williams, Resident Engineer. Further details will be found on page 309 of the 1927-28 report.

Dale-Long Creek Reconnaissance

Continuing the investigation for the most feasible route between Dale and Long Creek, Resident Engineer A. A. Kirkwood has made an additional investigation of the country between Long Creek and the Middle Fork of the John Day River gathering data from which to establish an approved route between these points.

Further details will be found on page 309 of the 1927-28 report.

Coles Bridge-Prairie City Survey

This section of the John Day Highway was constructed in the early stages of state highway construction. The increase in speed, weight and volume of motor vehicle traffic indicates the necessity of improvement of this section in the near future. With this view in mind, the betterment survey has been made under the direction of A. A. Kirkwood, Resident Engineer at John Day.

Rock Creek-Valades Ranch Survey

This survey was made for the purpose of preparing plans for the straightening and widening of the John Day Highway from the junction of this highway with the Ochoco Highway. The present section from Rock Creek to Valades Ranch is only 18 feet in width and as the adjoining sections have standard 24-foot roadbeds, it seemed desirable to make this one the same width. The surfacing of this section will also fit in nicely with the surfacing of the east end of the Ochoco Highway.

The length of the survey is 3.38 miles, the field work being under the supervision of J. E. Peck, Resident Engineer, and was completed on September 30, 1930.

HARNEY COUNTY

State highway construction in Harney County has been more active during the past biennium than it has for any previous corresponding period. East of Sage Hen Hill, the existing highway has been improved by the construction of 13.1 miles of surfacing, 2.74 miles of widening and resurfacing, 3.40 miles of bituminous macadam wearing surface and 12.23 miles of oil mat surface treatment, these improvements all being on the Central Oregon Highway between Burns and the top of Sage Hen Hill, about 16 miles west of Burns.

From Sage Hen hill to the Lake County line, a distance of 32.39 miles, construction has been under way and the grading of this section, with the possible exception of about three or four miles in the vicinity of Sage Hen hill, will be completed in 1930. 10.77 miles of this work are being constructed under contract and 21.62 miles have been built by state forces. This portion of the Central Oregon Highway is in a rather high and flat country and the work is quite light. Considerable study was given to the location of this section and excellent alignment was secured. All work in this county west of Sage Hen hill has been under the supervision of C. W. Wanzer, Division Engineer, with headquarters at Bend, and the work east of Sage Hen hill has been under the supervision of H. G. Smith, Division Engineer, with headquarters at La Grande.

Lake County Line-Gap Ranch Section Grading

On the Central Oregon Highway, from the Harney-Lake County line to a point four miles east of the Gap Ranch, 11.51 miles of grading 26-foot roadbed with 9-foot ditches.

Work commenced September 25, 1929; completed August 20, 1930. Final cost, $57,875.89. Resident Engineer, J. A. Runge.

On account of drainage, the grade line on this unit was carried higher than on previous sections built. The grades are light with the exception of two short stretches of 6 per cent, both of which are on tangents, and the sharpest curve is an 8 degree.

This work was done by state forces, except one rock cut between Sta. 4773+50 and Sta. 4782+50 which was contracted to Geo. H. Jacobson. The Jacobson contract is described in a separate article in this report.

Sage Hen Hill-Burns Surfacing

Federal Aid Project No. 148-A

On the Central Oregon Highway, from Sta. 952+50, which station is at the summit of Sage Hen hill about 16 miles west of Burns, to Sta. 1645+00, which station is about 2.8 miles west of Burns; 13.1 miles of crushed rock surfacing, 18 feet wide and 8 to 10 inches in depth.

Contract No. 1083, awarded March 29, 1929, to Wren & Greenough, of Portland, Oregon. Work commenced May 9, 1929; completed September 14, 1929. Final cost, $100,387.49. Resident Engineers, E. B. Loken and Tom Opedal, successively.

The surfacing of this section was a much needed improvement. The subgrade is composed mostly of a light soil and in addition to becoming very muddy during each spring thaw, likewise has been rapidly deteriorating by dusting out during the dry season of each year. In order to properly prepare the subgrade to receive the surfacing material, it was necessary to regrade certain portions of the section and install new drainage structures where the original structures had been inadequate.

No unusual difficulties were encountered in the surfacing work and the contractors were able to complete the work well in advance of the specified time limit.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 7,565.03
Purchase of quarry site		200.00
Lease of filler pit sites		275.00
Prospecting for surfacing materials		208.88
Sprinkling surfacing materials		3,477.20
Contract items as follows:		
Common excavation, 1,546.6 cu. yds. at 30c	$ 463.98	
Intermediate excavation, 1,685.1 cu. yds. at 50c	842.55	
Solid rock excavation, 2,268.7 cu. yds. at $1.00	2,268.70	
Common embankment, 20,710.9 cu. yds. at 20c	4,142.18	
Intermediate embankment, 2,128.2 cu. yds. at 40c	851.28	
Overhaul, 3,015 yd. sta. at 2c	60.30	
Class "A" concrete, 4.96 cu. yds. at $30.00	148.80	
Class "D" concrete, 26.39 cu. yds. at $25.00	659.75	
Cement rubble masonry, 72.58 cu. yds. at $8.00	580.64	
12-inch corrugated iron pipe, 118 lin. ft. at $2.50	295.00	
18-inch corrugated iron pipe, 10 lin. ft. at $3.00	30.00	
36-inch corrugated iron pipe, 30 lin. ft. at $7.00	210.00	
Base course surfacing, 26,376 cu. yds. at $1.04	27,431.04	
Top course surfacing, 10,740 cu. yds. at $1.04	11,169.60	
Maintenance materials, 7,118.1 cu. yds. at $1.07	7,616.37	
Earth filler, 11,191 cu. yds. at 25c	2,797.75	
Hauling broken stone, truck measure, 133,553 yd. mi. at 16c	21,368.48	
Hauling broken stone pile measure, 17,198 yd. mi. at 16c	2,751.68	
Filler haul, 19,692 yd. mi. at 20c	3,938.40	
Metal reinforcement, 2,998 lbs. at 10c	299.80	
Force account items as follows:		
Clearing and preparing stock pile sites	118.02	
Hauling culvert pipe	10.22	
Clearing and testing filler pits	98.26	
Preparing water holes	159.15	
Clearing filler of large rocks	255.37	
Rebuild forms to altered plans	94.06	
Total amount paid to contractor		88,661.38
Grand total cost of project, 1929-30		$100,387.49

PARTICIPATION IN COST

	State	County	Government	Total
Expended to date	$ 42,275.81	$ 15,000.00	$ 43,111.68	$100,387.49
Estimated cost to complete	Cr. 11,483.01		11,483.01	
Estimated total cost	$ 30,792.80	$ 15,000.00	$ 54,594.69	$100,387.49

Hines Mill-Burns Resurfacing and Widening

Federal Aid Project No. 148-E

On the Central Oregon Highway, from Sta. 1645+00, which station is near the Hines Lumber Company Mill 2.8 miles west of Burns, to the intersection of First and Monroe Streets in Burns, Oregon; 2.74 miles of roadbed widening to a width of 26 feet and crushed rock resurfacing 18 feet wide and 9½ inches in depth.

Contract No. 1117, awarded September 10, 1929, to C. E. Silbaugh, of Burns, Oregon. Work commenced September 24, 1929; completed May 29, 1930. Final cost, $50,337.40. Resident Engineer, Tom Opedal.

Due to the rapid increase in traffic between Burns and the newly constructed mill and town of the Hines Lumber Company, it was necessary to resurface the section of highway between the two points. In addition to resurfacing work, the contract also included widening of the roadbed to a width of 26 feet, together with the necessary extensions of drainage structures.

All work on the section was sublet to J. J. Fuller, sub-contractor of Burns, Oregon.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 5,209.39
Labor and materials furnished by state:		
Digging drainage ditches		105.25
Sprinkling surfacing materials		1,508.03
Contract items as follows:		
Common excavation, 10,340.3 cu. yds. at 50c	$ 9,670.15	
Intermediate excavation, 56.7 cu. yds. at 70c	39.69	
Shoulder materials, 676 cu. yds. at 30c	202.80	
Overhaul, 10,574. yd. stas. at 3c	317.22	
Truck haul, 11,860.3 yd. mi. at 25c	2,965.08	
Cement rubble masonry, 4.14 cu. yds. at $10.00	41.40	
12-inch corrugated iron pipe, 250 lin. ft. at $2.00	500.00	
18-inch corrugated iron pipe, 6 lin. ft. at $3.00	18.00	
24-inch corrugated iron pipe, 108 lin. ft. at $4.00	432.00	
36-inch corrugated iron pipe, 428 lin. ft. at $7.50	3,210.00	
Base course surfacing, 6,608 cu. yds. at $2.25	14,868.00	
Top course surfacing, 1,280 cu. yds, at $2.25	2,880.00	
Filler, 1,134 cu. yds. at 30c	340.20	
Filler haul, 1,342 yd. mi. a 25c	335.50	
Grade "A" maintenance materials in stock pile, 867.1 cu. yds. at $2.25	1,950.98	
Grade "B" maintenance materials in stock piles, 684.8 cu. yds. at $2.25	1,540.80	
Grade "C" maintenance materials in stock pile, 1,200 cu. yds. at $2.25	2,700.00	
Extra "C" maintenance materials in stock pile, 695.7 cu. yds. at $2.00	1,391.40	
Rock dust, 200.5 cu. yds. at 75c	150.38	
Force account items:		
Salvaging and placing culvert pipe	219.78	
Preparing stock pile site	17.14	
Deduction for decreased haul of maintenance materials, 1,723.7 yd. mi. at 16c Cr.	275.79	
Total amount paid to contractor		43,514.73
Grand total cost of project, 1929-30		$50,337.40

PARTICIPATION IN COST

	State	*Government*	*Total*
Expended to date	$ 39,742.53	$ 10,594.87	$ 50,337.40
Estimated cost to complete	Cr. 11,191.85	11,191.85	
Estimated total cost	$ 28,550.68	$ 21,786.72	$ 50,337.40

Unit "B" Lake County Line-Gap Ranch Grading

Federal Aid Project No. 148-D

On the Central Oregon Highway, from Sta. 4773+50 to Sta. 4782+50, which section is located one-quarter mile west of the Gap Ranch. 0.17 miles of grading standard 26-foot roadway.

Contract No. 1149, awarded February 27, 1930, to Geo. H. Jacobson. Work commenced March 4, 1930; completed August 23, 1930. Estimated cost, $6,000 consisting of $3,000 from state funds and $3,000 from government funds. Expenditures to date have amounted to $2,505.01 from state funds. Resident Engineer, J. A. Runge.

It was originally planned to construct this 900-foot section of road with state forces, but so much rock was encountered that it was decided to contract the work inasmuch as the type of equipment used by the state in building the adjoining sections was not suitable for moving material from heavy rock cuts.

The contractor sublet the work to three different station gangs. Each gang worked only a short time and the contractor finally started to work a force of his own, using cars and track to move the material. He, however, was unable to complete the job and at the request of the bonding company, the state crew finished the remaining part of the work.

Gap Ranch-Silver Creek Grading

Federal Aid Project No. 148-F

On the Central Oregon Highway, from a point 4 miles east of the Gap Ranch to a point 1½ miles southeast of Riley, 10.11 miles of grading 26-foot roadbed with 9-foot ditches.

Work commenced May 18, 1930; completed August 15, 1930. Estimated cost, $37,000, consisting of $14,304.41 from state funds and $22,695.59 from government funds. Expenditures to date, $23,841.32. Resident Engineer, J. A. Runge.

With the exception of three timber bridges, the work on this section was done by state forces, the roadbed being constructed to what is termed a grader section. No curvature occurs on the section, the alignment consisting of one ten-mile tangent. A comparative high-grade line was used due to the possibility of high water in the Silver Creek Valley. The construction of the timber bridges is being done as a part of the work under contract 1211, which likewise covers the grading of the Silver Creek-Sage Hen hill section. A description of the work under contract 1211 is found in a separate article in this report.

Silver Creek-Sage Hen Hill Grading

Federal Aid Project No. 148-G

On the Central Oregon Highway, from Sta. 5530+00, which station is about one and one-half miles southeast of Riley, to Sta. 6092+92, which station is about 16 miles west of Burns; 10.60 miles of grading, standard 26-foot roadway.

Contract No. 1211 awarded July 24, 1930 to C. E. Silbaugh of Burns, Oregon. Work commenced September 2, 1930. Estimated cost, $53,000, consisting of $23,415.04 from state funds and $29,584.96 from government funds. Expenditures to date, $7,663.08 from state funds. Resident Engineer, Tom Opedal.

In addition to the work to be performed on this section, there was included under the contract the construction of three timber trestles on the Gap Ranch-Silver Creek section. The original plans specified all of the structures to be pile trestles. However, rock was encountered at the bridge sites, thus prohibiting the driving of piling and making it necessary to substitute concrete pedestals. This change in plans is covered by a supplemental agreement.

It is anticipated that the work on this project will be completed in the spring of 1931.

The right of way is 80 feet in width and was secured by the Harney County Court, by resolution.

Buchanan-Nigger Flat Grading

On the Central Oregon Highway, from Sta. 604+50, which station is near the Buchanan Ranch 24 miles east of Burns, to Sta. 422+00, which is the junction of the Burns-Otis Creek Market Road with the Central Oregon Highway; 3.43 miles of grading.

Contract No. 997, awarded September 27, 1927, to Jetley Bros., of Burns, Oregon. Work commenced October 18, 1927; completed September 20, 1929. Final cost, $47,658.49. Resident Engineers, W. C. Williams, E. B. Loken and Tom Opedal, successively.

The completion of this section, which was let as part of a contract covering an additional 7.74 miles on the Burns-Otis Creek Market Road, was delayed some 14 months beyond the specified time limit. This was a result of the inability of the contractor to work during the winter months, and to their negligence in not pushing the work ahead during the fair weather season of 1928.

In July, 1929, Resident Engineer E. B. Loken died as a result of spotted fever contracted from the bite of a sage tick. He was succeeded by Resident Engineer Tom Opedal.

Further details will be found on page 310 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 3,854.77
Contract items as follows:		
Clearing and grubbing, all	$ 736.97	
Common excavation, 5,027.6 cu. yds. at 34c	1,709.38	
Intermediate excavation, 8,791.8 cu. yds. at 54c	4,747.57	
Solid rock excavation, 28,265.8 cu. yds. at $1.04	29,396.43	
Overhaul, 19,024 yd. sta. at 8c	1,521.92	
Class "A" concrete, 33.88 cu. yds. at $30.00	1,001.40	
Class "B" concrete, 7.80 cu. yds. at $28.00	218.40	
Rubble masonry, 59.56 cu. yds. at $4.00	238.24	
Riprap, 59.7 cu. yds. at $2.50	149.25	
Earth cushion, 2,434 cu. yds. at 40c	973.60	
Earth cushion haul, 162 yd. mi. at 20c	32.40	
Metal reinforcement, 3,629 lbs. at 10c	362.90	
Lumber and timber, 7.71 M-FBM at $70.00	539.70	
18-inch corrugated iron pipe, 710 lin. ft. at $2.50	1,775.00	
24-inch corrugated iron pipe, 96 lin. ft. at $4.00	384.00	
Force account item:		
Placing wearing surface on bridge deck	16.56	
Total amount paid to contractor		43,803.72
Grand total cost of project		$ 47,658.49

PARTICIPATION IN COST

	State	County	Total
Expended 1927-28 biennium	$ 21,439.15	$ 18,622.21	$ 40,061.36
Expended 1929-30 biennium	4,317.48	3,279.65	7,597.13
Total of expenditures	$ 25,756.63	$ 21,901.86	$ 47,658.49

Storage Building at Burns

On the Central Oregon Highway in the town of Burns; 28 x 84-foot standard frame maintenance storage building.

Contract No. 1135, awarded October 30, 1929, to R. H. Jones of Baker, Oregon. Work commenced November 25, 1929; completed August 23, 1930. Final cost, $4,306.16, from state funds. Resident Engineer, M. Stephenson.

This building provides storage facilities for equipment required in the patrol maintenance operations on the Central Oregon Highway in the vicinity of Burns. It also provides a shop where minor repairs can be made.

The building is located on a tract of land containing 1.0 acre, situated in Burns between Fifth and Sixth Streets, two blocks south of the Central Oregon Highway. The property was acquired from C. H. Voegtly of Burns, Oregon, in October, 1929. Negotiations for the purchase of the tract were handled by J. N. Bishop, Resident Maintenance Engineer at Baker.

Maintenance

One patrol headquarters has been established in Harney County, being located at Burns. The patrol site was purchased by the State Highway Commission in 1930, and a frame storage building constructed to house the equipment.

A total of 48.13 miles of highway was under maintenance in the county at the close of the present biennium which consisted of 3.40 miles of bituminous macadam, 12.23 miles of oiled macadam, 29.07 miles of untreated gravel surface and 3.43 miles of graded roadbed.

W. W. Stiffler, Resident Maintenance Engineer at Baker, has had supervision over maintenance work in this county subsequent to March 1, 1930. Prior to that date J. N. Bishop was the Resident Maintenance Engineer in charge.

The completed portions of the Central Oregon Highway west of Sage Hen hill were not finished until late in the summer of 1930, and accordingly no maintenance work has been done on those sections.

During the biennium, expenditures for general maintenance and minor betterment have been $21,234.68 and $278.49 respectively.

Burns-Poison Creek Survey

During the spring and summer of 1929, Resident Engineer E. B. Loken, with headquarters at Burns, made a location survey from Burns to connect with a location survey of the U. S. Bureau of Public Roads approximately 3.2 miles north of Burns. Work on the survey was carried on only at such times when the survey party could be spared from other work on which the party was principally engaged.

The located line traverses that portion of Harney Valley north of Burns on a tangent, the tangent being connected on the south to the center line of Second Street by a light curve, and connecting on the north with a line located by the Bureau, which line runs parallel with the Bear Valley Railroad, a logging road owned and operated by the Hines Lumber Company, and continues up Poison Creek to the end of a previously constructed section of the Burns-Canyon City road.

HOOD RIVER COUNTY

No additional highways were constructed in Hood River County during the last two years, the major activities having been confined to major and minor betterments. Two contracts were let for the production of crushed rock for use in putting a non-skid surface on the Columbia River Highway. A contract was also let for the application of this non-skid treatment and the work has been completed from the Multnomah County line, which is about 2.6 miles west of Cascade Locks, to a point about two miles east of Hood River. On the Columbia River Highway, several large slide removal projects were completed by state forces and on the Mt. Hood Highway state force work consisted of felling dangerous trees between Parkdale and Barlow Pass, over 10,000 trees being cut, piled and burned.

Maintenance

There are 67.92 miles of state highway under maintenance in Hood River County, of which 25.95 miles, on the Columbia River Highway, are paved, 40.17 miles on the Mount Hood Highway are oiled macadam, and 1.80 miles are bituminous macadam. The maintenance costs are particularly heavy on the Columbia River Highway due to the nature of the country which it traverses. The road is located along the foot of very high, steep hills and rocks are continually rolling down these slopes during rainy weather, and during the period in the spring when the ground thaws out. These rocks, lodging on the highway, constitute a serious hazard to traffic and the prompt removal of them is imperative. At times it is necessary to maintain a day and night patrol with heavy trucks to keep the road clear. Snow removal costs are also high in this section. The steep hills, after heavy snow storms, often cause snow slides to occur which block the highway and this makes it necessary to maintain heavy snow removal equipment at Hood River during the entire winter. The storms, while not frequent, develop very suddenly, which necessitates the availability of such equipment at all times. Besides the removal of snow and slides, the maintenance crews have kept the shoulders built up, repaired guard rails, painted traffic stripes on pavement, and looked after the drainage structures.

Work on the Mount Hood Highway is not carried on so extensively, nor is it as costly, due to the nature of the country traversed. The usual maintenance activities have been carried on throughout each year, consisting of the reoiling of the macadam, removal of slides and patching of the roadway. During the biennium 68.12 miles of oiled macadam were reoiled. Snow has been cleaned off this road from Hood River south to Cooper Spur Junction during winter months. In the winter of 1929-1930, an attempt was made to keep the entire highway free of snow, but due to lack of equipment, the experiment was not successful.

The maintenance work in this county, prior to March, 1930, was supervised by K. D. Lytle, Resident Maintenance Engineer, with headquarters at The Dalles. Subsequent to that time, J. N. Bishop, Resident Maintenance Engineer, with headquarters at the same place, has been in charge of the work.

Total expenditures for general maintenance and betterment operations, during the past biennium, have amounted to $139,290.03 and $11,970.11 respectively.

JACKSON COUNTY

The only work done in this county of a major betterment nature has been the regrading and surfacing of an 11.17 mile section, on the Green Springs Highway between Keene Creek and Klamath County line, and the repaving of a section between Medford and Pheonix on the Pacific Highway, a distance of 5.87 miles.

The work done in this county has been in charge of W. E. Chandler, Division Engineer at Grants Pass.

Medford-Phoenix Paving

Federal Aid Project No. 157-A

On the Pacific Highway, from Sta. 576+00, which station is at the intersection of Riverside Avenue and 12th Street in the city of Medford, to Sta. 265+93.2, which station is about 1½ miles south of the town of Phoenix; 5.87 miles of 20-foot paving; 24-inch concrete shoulders were added to the old 16-foot concrete pavement and the space in between was filled with bituminous paving; 4-foot rock shoulders were constructed outside the concrete shoulders.

Contract No. 1125, awarded October 1, 1929, to L. O. Herrold, of Salem, Oregon. Work commenced April 5, 1930. Estimated cost, $137,000, consisting of $57,082.15 from state funds and $79,917.85 from government funds. Expenditures to date have amounted to $104,888.05, of which $63,990.51 were state funds and $40,897.54 were government funds. Resident Engineer, John Neef.

Many experiments were tried with different types of non-skid surface treatment. The most successful treatment, and the one finally adopted consisted in placing a layer of screenings, ¾ to ¼-inch in size, heated in the plant and coated with 2 per cent of asphaltic cement, on the pavement at the rate of 15 pounds to the square yard. This material was spread and rolled while the pavement was still warm. A finishing machine was used with very apparent success. A minimum thickness of 1¾-inch bituminous material was placed over the old concrete paving. Low spots in the old pavement were filled in with a coarse mix.

Prospect-Park Boundary Bituminous Macadam

On the Crater Lake Highway from Mile Point 45.31 at Prospect to Mile Point 67.69 at the Crater Lake Park Boundary; 21.68 miles of bituminous macadam wearing surface 1½ inches in thickness and 18 feet in width. Work performed during June and July, 1930, by the state oiling crew under Foreman S. A. Barnam. Estimated cost, $49,500, from state funds. Total expended to date, $46,593.84. Resident Engineer, C. H. Armstrong.

Keene Creek-Jenny Creek Regrading and Resurfacing

Federal Aid Project No. 86

On the Green Springs Highway, from Sta. 54+84, which point is approximately 11.0 miles east of the junction of the Green Spring Highway with the Pacific, to Sta. 405+50, which point is approximately 4½ miles west of the Jackson-Klamath County line; 6.56 miles of regrading and resurfacing. Standard 26-foot roadbed was used in regrading and the surfacing was spread to a compacted thickness of 9 inches and a width of 18 feet.

Contract No. 1099, awarded June 27, 1929, to Washburn and Hall, of Portland, Oregon. Work commenced July 15, 1929. Estimated cost, $152,000, consisting of $69,647.62 from state funds and $82,352.38 from government funds. Expenditures to date have amounted to $133,430.06, the state having expended $61,980.43 and the government $71,449.63. Resident Engineer, P. P. Whitmore.

The grading is now completed and the surfacing is all on the road. There still remains a small amount of maintenance material to get out, but this work should be completed by December 1, 1930.

Prospect-Rogue River Bridge Regrading and Surfacing

On the Crater Lake Highway, from Mile Point 45.94 at Prospect to Mile Point 45.34 at the Rogue River Bridge; 0.6 mile of regrading with 26-foot roadbed and surfacing 18 feet in width.

This was a major betterment project undertaken by state forces under the supervision of Resident Engineer C. H. Armstrong, the work being performed during May, 1930. The highway was reconstructed on a revised alignment, eliminating two dangerous reverse curves at the north approach to the Rogue River Bridge. The final cost of the improvement amounted to $10,036.63 from state funds.

Maintenance

State highways under maintenance in Jackson County comprise a total of 144.75 miles of which there are 51.06 miles of bituminous pavement, 4.25 miles of concrete pavement, 66.62 miles of bituminous macadam, 9.40 miles of oiled macadam and 13.42 miles of untreated rock and gravel surfacing.

The maintenance work in this county has consisted of the usual blading of macadam surface, the patching of pavement and bitumionus macadam, the cleaning of ditches, the removal of snow and slides, rebuilding and repairing of guard rails, etc.

Patrol maintenance headquarters have been established at Rogue River, Siskiyou, Pinehurst, Eagle Point, and Prospect and all maintenance work in the county has been under the supervision of C. H. Armstrong, Resident Maintenance Engineer with headquarters at Medford.

During the biennium there has been expended in the county, for general maintenance purposes the sum of $199,344.90 and for minor betterment work, $55,250.64.

Medford-Prospect Resurfacing

This project was completed during the previous biennium, and a descriptive article will be found on page 317 of the report for that period.

The only entry during the present biennium was to record the purchase of the quarry site for $850. The total cost now amounts to $40,459.50, paid entirely from state funds.

Prospect-Park Boundary Maintenance Materials

On the Crater Lake Highway, from Mile Point 43, which point is about 3 miles west of Prospect, to the west boundary of the Crater Lake National Park, a total of twenty-five miles of resurfacing and furnishing maintenance materials.

Contract No. 993, awarded August 30, 1927, to C. L. Camp, of Gold Hill, Oregon. Work commenced October 15, 1927; completed October 11, 1928. Final cost, $22,550.19. Resident Engineer, C. H. Armstrong.

Further details will be found on page 318 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 2,005.36
Maintaining completed portions of surfacing		2,374.65
Preparing stock pile sites		67.81
Constructing signs for traffic control		32.41
Credit for materials stockpiled for future betterment work Cr.		27,300.00
Contract items as follows:		
Grade "A" materials in stock piles, 3,529.8 cu. yds. at $2.40	$ 8,471.52	
Grade "B" materials in stock piles, 4,776.9 cu. yds. at $2.40	11,464.56	
Grade "C" materials in stock piles, 7,681.8 cu. yds. at $2.25	17,284.05	
Grade "A" materials in trucks, 944.5 cu. yds. at $1.40	1,322.30	
Grade "B" materials in trucks, 1,601.5 cu. yds. at $1.40	2,242.10	
Grade "C" materials in trucks, 119 cu. yds. at $1.20	142.80	
Grade "AB" materials in stock piles, 268 cu. yds. at $1.40	375.20	
Truck haul, 14,400.25 yd. mi. at 18c	2,592.05	
Preparing stock pile sites, force account	1,633.19	
Total amount earned by contractor	$ 45,527.77	
Deduction for haul adjustment, 751.46 yd. mi. at 21c	157.81	
Total amount paid to contractor		45,369.96
Grand total cost of project, all state funds		$ 22,550.19

SEGREGATION OF FUNDS

Expended 1927-28 biennium	$ 11,351.78
Expended 1929-30 biennium	11,198.41
Total of expenditures	$ 22,550.19

Gold Hill-Medford Survey

This survey was begun in February, 1927 and a descriptive article will be found in the 1927-28 report on page 319. In February, 1930, further investigations were made, an alternate line run and several projections made in order to compare grading and right-of-way costs on this proposed re-location. Additional study and investigation will be necessary due to right-of-way difficulties, in order to arrive at the best and most economical location. The 1927 survey was under the direction of Resident Engineer C. H. Armstrong and the 1930 survey was under the direction of Resident Engineer Jos. G. Toole. The length of line under consideration is 8.69 miles.

Further details will be found on page 319 of the 1927-1928 report.

Ashland-California State Line Survey

This survey was made with the necessity in mind of rebuilding, in the near future, that section of the Pacific Highway over the Siskiyou Mountains. The section surveyed extends from the California line to a point about 1½ miles north of the Siskiyou summit. This line is on a new route although it crosses the present highway at several points and crosses the summit on nearly identical alignment with the present road.

Seven and two-tenths miles were run of preliminary line and 6.0 miles of location started by Joe G. Toole, Resident Engineer, during the winter of 1929-30.

Pacific Highway Junction-Klamath County Line Survey

This survey consisted of a revision of the present alignment for straightening and widening the highway. The location was made direct, as a reconnaissance had been made and a preliminary was not necessary. The survey was made under the direct supervision of P. P. Whitmore, Resident Engineer, being carried on with other survey and construction work in this vicinity. The net length of line surveyed was 21.7 miles.

JEFFERSON COUNTY

The construction of the state highways within this county was completed several years ago and no work of major importance has been done during the past two years. Several minor betterment jobs, which included roadbed widening north of Madras, widening of the undercrossing south of Madras, the revision of a curve at the Wasco-Jefferson County line, and the resurfacing of 0.4 mile south of Willowdale have been completed.

All state work within the county has been under the supervision of C. W. Wanzer, Division Engineer, with headquarters at Bend.

Crooked River Section Surfacing

On The Dalles-California Highway, from Sta. 0+00, 1.5 miles north of the town of Terrebonne and extending north to Sta. 240+00, approximately six miles south of Culver, being partly in Jefferson and partly in Deschutes County; 4.55 miles of broken stone surfacing, 18 feet wide and eight inches in thickness, being of the "trench" type of cross-section.

Contract No. 867, awarded February 25, 1926, to Kibbler and Bartlett, of Albany, Oregon. Work commenced July 13, 1926; completed November 6, 1926. Final cost, $30,414.32. Resident Engineer, W. S. Hodge.

Opened only to record the receipt of $8,830.50 from the county. The final cost now consists of $20,701.66 from state funds and $9,712.66 from county funds. Further details will be found on page 320 of the 1927-28 report.

Black Butte-Suttle Lake Forest Road Project

This project is a 4.3 mile section of the Santiam Highway in Jefferson County from Suttle Lake to the Deschutes County line. Bids for this work were opened by the Bureau of Public Roads June 4, 1930, and award was recommended to E. C. Peck & Company, but due to an irregularity in the bid, it was finally rejected and award was made to Washburn & Hall, next lowest bidder. Owing to the delay, work was not officially started until August 1, 1930. At the date of this report the project is estimated as 75 per cent complete, there remaining approximately a mile of light grading and general clean-up and finishing.

The Lake Creek Bridge included within the limits of the above section was awarded separately on June 9, 1930, to Oscar Joelson, and work was begun July 29, 1930. It is estimated that the work will be completed in November, 1930.

The estimated cost of the grading and bridge construction is $58,000, the state's share being $13,000, the county's share $13,000 and the government's share $32,000.

Maintenance

There are 40.10 miles of state highways under maintenance in this county, all of which have been oiled and are in good condition. In 1929, a portable paving plant patched all holes and depressions in the oil treated surfacing and since then very little work has been necessary. During the biennium 16.15 miles of oiled macadam were reoiled. The usual maintenance activities have been taken care of by a maintenance patrol crew stationed at Madras, working under the supervision of W. S. Hodge, Resident Maintenance Engineer, with headquarters at Redmond.

During the biennium, general maintenance expenditures in Jefferson County have amounted to $42,016.76, and the expenditures for minor betterment work have been $6,295.20.

JOSEPHINE COUNTY

Oiled macadam on the Redwood Highway, the bridge over the Rogue River at Grants Pass and the widening of the Oregon Caves Highway have been the major work in this county during the past two years. Surveys have been made for future alignment changes on the Pacific Highway.

Work in this county has been in charge of Wm. E. Chandler, Division Engineer, with headquarters at Grants Pass.

Deer Creek-Shattuck Corner Oiling and Bituminous Macadam

Federal Aid Project No. 127-C

On the Redwood Highway, from Sta. 1098+67, which point is about ½ mile south of the town of Selma, to Sta. 2106+26, which point is about 5½ miles west of Grants Pass; 17.72 miles of heavy oil and bituminous macadam wearing surface segregated as follows: 6.89 miles heavy oil wearing surface, 2.59 miles penetration type bituminous macadam, 8.24 miles multiple lift bituminous macadam. Surfacing constructed 18 feet wide.

Contract No. 1072, awarded March 8, 1929, to J. C. Compton, of McMinnville, Oregon. Work commenced May 6, 1929; completed August 6, 1930. Final cost, $58,527.92. Resident Engineer, S. H. Boardman.

This project was the first oil macadam surfacing to be laid in the state by contract. The result proved very satisfactory; even more satisfactory than has been obtained by state force work. All types are standing in fine shape. The relative merits of different types can be determined only after a period of 5 to 6 years.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 3,455.28
Purchase of sand		52.65
Purchase of shoulder rock		375.21
Contract items as follows:		
Mineral aggregate in type "A" surface, 1,352.5 cu. yds. at $3.38	$ 4,571.45	
Mineral aggregate in type "B" surface, 2,835.5 cu. yds. at $2.15	6,096.33	
Mineral aggregate in type "C" surface, 8,736 cu. yds. at $1.73	15,113.28	
No. 1 oil in place, 1,572.67 bbls. at $3.68	5,787.43	
No. 3 oil in place, 4,501.14 bbls. at $4.63	20,840.28	
Placing rock in shoulders, 170.0 cu. yds. at $1.25	212.50	
Extra haul on aggregate, 2,679.08 yd. mi. at 0.18	482.23	
Force account items as follows:		
Loading, hauling and spreading rock on wet base oil	179.56	
Protecting bridge handrails and culvert headwalls from oil	149.63	
Operating pilot car	212.68	
6-inch drain tile in place	342.30	
Hauling and stockpiling sand	427.89	
Cleaning up stock piles	80.64	
Sealing shoulders on curves	148.58	
Total amount paid to contractor		54,644.78
Grand total cost of project 1929-30		$ 58,527.92

PARTICIPATION IN COST

State	$ 29,778.32
Government	28,749.60
Total expenditures	$ 58,527.92

Hayes Hill-Shattuck Corner Surfacing

Federal Aid Project No. 127-B

On the Redwood Highway, from Sta. 1363+50, which station is at the summit of Hayes Hill, and approximately four miles north of Selma, north and east to Sta. 2103, which station is near a point known as Shattuck Corner and is about five miles south and west of Grants Pass; 10.77 miles of surfacing and 1.87 miles of resurfacing. The resurfacing includes that portion from the summit to the foot of Hayes Hill. This contract also includes the furnishing of maintenance materials in stock piles.

Contract No. 979, awarded June 23, 1927, to Harness and Colby, of Roseburg, Oregon. Work commenced August 30, 1927; completed July 1, 1928. Resident Engineer, C. H. Armstrong.

This project was opened during the past biennium only to record the receipt of $24,948.07 from the government. The total cost of the project now amounts to $77,985.74, of which $39,824.54 was expended from state funds and $38,161.20 from government funds.

Further details will be found on page 327 of the 1927-28 report.

Hayes Hill-Shattuck Corner Grading

This project was completed during the previous biennium and a descriptive article will be found on page 332 of the last report.

The only entries during the present biennium cover engineering charges amounting to $114.46 and the receipt of $2,524.24 from the federal government. The final total cost of the project has amounted to $144,248.58, of which the state has expended $65,319.18 and the government $78,929.40.

Oregon Caves Forest Road Widening

This project was a continuation of the work carried on during the previous biennium, which consisted of making the route to the Caves a two-way road, with a 14-foot standard roadbed width throughout its entire length of 11.68 miles. The work was performed by day labor and was completed on July 27, 1929.

The entire cost of the project has amounted to $103,998.97, consisting of $62,000 from state funds, $8,000 from county funds and $33,998.97 from government funds.

Further details will be found on page 328 of the 1927-28 report.

Six Bridges on the Redwood Highway

Federal Aid Project No. 127-B

On the Redwood Highway near Grants Pass. The contract included a 40-foot concrete span over Clear Creek, a 20-foot concrete span over Clear Creek, a 30-foot concrete span over Waters Creek, a 30-foot concrete span over Slate Creek, a 35-foot concrete span over Slate Creek and a 35-foot span over Butcher Knife Creek.

Contract No. 942, awarded January 27, 1927, to O. N. Pierce Company, of Portland, Oregon. Work commenced April 20, 1927; completed August 15, 1927. Final cost, $24,906.01. Resident Engineer, C. A. Jordan.

This project was opened during the past biennium only to record the receipt of $1,394.49 from the government. The final cost now amounts to $10,187.34 from state funds and $14,718.67 from government funds.

Further details will be found on page 336 of the 1927-28 report.

Rogue River Bridge

Federal Aid Project No. 131-B

On the Pacific Highway at Grants Pass; three 150-foot concrete through arch spans and two 51-foot concrete approach spans, with 27-foot clear roadway and two 5-foot sidewalks.

Contract No. 1142, awarded February 10, 1930, to J. K. Holt, of Salem, Oregon. Work commenced April, 1930. Estimated cost, $136,000, consisting of $37,664.10 from state funds, $20,000 from county funds and $78,335.90 from government funds. Expenditures to date have amounted to $53,591.34 from state funds and $10,000 from county funds. Resident Engineers, C. A. Jordan and R. T. Stanley.

This bridge is one of the major structures under construction during this biennium. It replaces an old steel bridge across the Rogue River at the south edge of Grants Pass. The work is proceeding according to schedule and should be completed by early spring of 1931. The bridge has a 27-foot roadway and two 5-foot sidewalks to care for the heavy traffic on this section of highway.

Maintenance

State highways under maintenance in Josephine County comprise a total of 94.38 miles, of which there are 32.81 miles of bituminous pavement, 10.83 miles of bituminous macadam, 33.97 miles of oiled macadam, 9.48 miles of untreated macadam and 7.29 miles of earth roads.

The maintenance has been of a routine nature, consisting of the general repairs to pavement, oiled macadam and untreated macadam. Much pavement patching has been done on the Pacific Highway, resulting in a smoother riding surface. The maintenance has been in charge of Wm. Strohmeyer, Resident Maintenance Engineer, with headquarters at Roseburg.

During the biennium the total expenditures for general maintenance were $84,439.79, and the total expenditures for minor betterments, $13,795.47.

Survey for Rogue River Bridge at Grants Pass

This survey entailed the running of several thousand feet of base line as well as the center line for the proposed bridge and approaches, tying in all buildings, property corners, pipe lines, old bridges, telephone and telegraph lines, topography, etc. In short, securing all data necessary for making the proposed bridge plans and detail maps of bridge location and vicinity. The survey work was done by C. H. Armstrong, Resident Engineer, during April, 1929.

Grants Pass-Jackson County Line Survey

The revised alignment on the Pacific Highway along the 4.3-mile section immediately north of the Jackson County line as relocated by Resident Engineer C. H. Armstrong in 1928 was retraced in 1930 by Resident Engineer Jos. G. Toole and party. Slight revisions and property ties were made and complete plans made up.

Further details may be found on page 334 of the 1927-28 report.

KLAMATH COUNTY

There have been many miles of highway construction in Klamath County during the past two years, consisting of paving, grading, oiling, regrading, surfacing and resurfacing, which have greatly improved the roads in this county. Surveys for future work have been made in several places.

The work in this county on The Dalles-California Highway south of Crescent, the Klamath Falls-Lakeview Highway and the Green Springs Highway has been in charge of Wm. E. Chandler, Division Engineer, with headquarters at Grants Pass. C. W. Wanzer, Division Engineer, at Bend is in charge of work on The Dalles-California Highway north of Crescent and the Fremont Highway.

Klamath Falls Bituminous Macadam Project

On The Dalles-California Highway, from Lakeview Junction to Merrill; on the Klamath Falls-Lakeview Highway, from Klamath Junction east 10 miles, and from Dairy to Bly Mountain; and on the Green Springs Highway, extending west from Klamath Falls 4 miles, and extending west from Keno 10 miles; 42.88 miles of bituminous macadam wearing surface and 2.6 miles of oil surface treatment.

Contract No. 1152, awarded March 5, 1930, to J. C. Compton, of McMinnville, Oregon. Work commenced May 13, 1930. Estimated cost, $150,000, consisting of $135,038.98 from state funds and $14,961.02 from government funds. Expenditures to date have amounted to $117,722.81, from state funds. Resident Engineer, C. C. Seeley.

On The Dalles-California Highway there were constructed 13.65 miles of bituminous macadam 2½ inches thick and 18 feet in width, from Mile Point 290.1 at Lakeview Junction to Mile Point 304.3 at Merrill. Between Mile Points 303.22 and 303.77, a 0.55-mile section was treated only with an oil-seal coat on account of unstable subgrade.

Five and forty-one hundredths miles of bituminous macadam 1½ inches in thickness and 18 feet in width were constructed on the Klamath Falls-Lakeview Highway from Mile Point 0.10 at Klamath Falls Junction to Mile Point 1.70, and between Mile Point 6.22 and Mile Point 10.03; 4.52 miles were constructed between Mile Point 1.70 and Mile Point 6.22 with a thickness of 2 inches and 18 feet in width. Also, on the Dairy-Bly Mountain section, between Mile Point 18.52 and Mile Point 25.20, there were constructed 6.68 miles of bituminous macadam 2 inches thick and 18 feet in width.

Beginning four miles west of Klamath Falls, there were constructed 4 miles of bituminous macadam 2½ inches thick and 18 feet in width, between Mile Points 52.15 and 56.15. Also, between Mile Points 36.48 and 45.10, there were constructed 8.62 miles of bituminous macadam 1½ inches thick and 18 feet in width, situated immediately west of Keno. A section 2.05 miles running westerly from this newly-constructed bituminous macadam was also given an oil surface treatment 18 feet in width.

Klamath Falls-Lakeview Junction Paving

On The Dalles-California Highway, from Sta. 0+00, which station is at the south city limits of Klamath Falls to Sta. 201+57, which station is at the junction of The Dalles-California Highway with the Klamath Falls-Lakeview Highway; 3.839 miles of concrete paving.

This pavement is a standard 20-foot concrete pavement, 7 inches thick in the center and tapering to 9 inches in the outer 3 feet on each side.

Contract No. 1100, awarded June 27, 1929, to W. D. Miller Construction Co., of Klamath Falls, Oregon. Work commenced July 22, 1929; completed December 4, 1929. Final cost, $129,424.19. Resident Engineer, John H. Neef.

The sub-grade on this section was reconstructed under state contract No. 1073 in the early spring of 1929 during damp weather. All fills were built with heavy trucks, the material being deposited in one-foot lifts. A sprinkler truck was employed to keep the new grade wet at all times, which resulted in well-compacted fills. The paving has been completed more than one year and no cracks have shown to date.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 6,465.64
Labor and materials furnished by the state:		
Rolling subgrade		27.38
Steel stakes for binding concrete to bituminous pavement		17.04
Sprinkling shoulders and detours		445.75
Royalty on embankment materials		214.95
Maintaining county road used as detour		755.20
Rental of state equipment deducted from contractor's estimate		281.35
Contract items as follows:		
Preparation of subgrade, 45,539.024 sq. yds. at 8c	$ 3,643.12	
Concrete pavement, 45,539.024 sq. yds. at $2.21	100,641.24	
Expansion joints, 6,806.58 lin. ft. at 23c	1,565.51	
Contraction joints, 13,677.11 lin. ft. at 5c	683.86	
Bar reinforcement, 77,359.43 lbs. at 6c	4,641.57	
Rock shoulder construction, 2,501 cu. yds. at $1.00	2,501.00	
Special embankment materials, 3,883 cu. yds. at 50c	1,941.50	
No. 3 crushed rock for drain tile, 172.5 cu. yds. at $2.75	474.38	
Surfacing on road approaches, 149.5 cu. yds. at $2.75	411.13	
Truck hauling, 12,468.50 yd. mi. at 18c	2,244.33	
Force account items as follows:		
Furnishing and installing mortise joints	166.54	
Regrading to form 32 ft. roadbed	1,597.00	
Furnishing and placing drain pipe	810.69	
Maintenance of detour	176.36	
Total amount earned by contractor	$121,498.23	
Deduction for rental of state equipment	281.35	
Total amount paid to contractor		121,216.88
Grand total cost of project, all state funds, 1929-30		$129,424.19

Altamont Canal Section Paving

On The Dalles-California Highway, from Sta. 73+13.3 to Sta. 77+30.3. The bridge over the Altamount Canal occupies the space between Sta. 74+75 and Sta. 75+65. This bridge is about two miles southeast of Klamath Falls; 327 lineal feet of concrete paving, 20 feet wide, 7 inches in thickness in center and tapering to 9 inches in thickness in outer 3 feet on each side, widened at bridge ends.

Contract No. 1180, awarded April 18, 1930, to W. D. Miller Construction Co., of Klamath Falls, Oregon. Work commenced May 21, 1930; completed July 10, 1930. Final cost, $3,148.93. Resident Engineer, C. C. Seeley.

Due to delay in the construction of the Altamont Canal bridge, the paving of the approaches could not be completed under the Klamath Falls-Lakeview Junction project. The contract for paving the Altamont Canal section was given to W. D. Miller after prices had been asked from other Klamath Falls contractors.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 200.45
Widening roadbed		86.76
Contract items as follows:		
Preparation of subgrade, 878.4 sq. yds. at 8c	$ 70.27	
Concrete pavement, 910 sq. yds. at $2.70	2,457.00	
Expansion joints, 248 lin. ft. at 23c	57.04	
Contraction joints, 192 lin. ft. at 8c	15.36	
Reinforcing steel, 3,743.5 lbs. at 7c	262.05	
Total amount paid to contractor		2,861.72
Grand total cost of project, all state funds 1929-30		$ 3,148.93

Dairy-Bly Mountain-Bonanza Surfacing

On the Klamath Falls-Lakeview Highway, from Mile Point 10.2 on the Klamath Falls-Lakeview Highway to Mile Point 25.2, which point is about ½ mile west of the Bly Mountain summit, and on the county road from a connection at Mile Point 22.2 on the Klamath Falls-Lakeview Highway south to Sta. 452 on the county road, which station is about 2 miles north of Bonanza; 21.1 miles of surfacing and maintenance materials. On the state unit, 15.0 miles of surfacing 18 feet wide with a compacted thickness of 8 inches; on the county unit, 6.1 miles of surfacing, 10 feet wide and 8 inches deep, loose measure.

Contract No. 1118, awarded August 29, 1929, to Joslin & McAllister, of Spokane, Washington. Work commenced December 14, 1929. Estimated cost, $118,000 from state funds. Expenditures to date, $84,419.16. These costs cover only the work on the state project, all expenditures incurred on the county project being paid direct by Klamath County. Resident Engineer, C. C. Seeley.

While the work on this project will probably not be complete on the specified date of completion, it is anticipated that all surfacing will be laid by that time and this will permit travel on the road without inconvenience, during the winter of 1930.

Beatty-Forest Boundary Surfacing

On the Klamath Falls-Lakeview Highway, from Sta. 1488+40, which station is in the town of Beatty, east to Sta. 2601+00, which station is near the west boundary of the Fremont National Forest; 21.01 miles of surfacing and the furnishing of maintenance materials in stockpiles. Surfacing placed to width of 18 feet and a compacted thickness of 8 inches.

Contract No. 1036, awarded April 20, 1928, to Wren & Greenough, of Portland, Oregon. Work commenced July 2, 1928; completed April 13, 1929. Final cost, $174,815.88. Resident Engineer, Jos. G. Toole.

Very favorable progress was made on this project, which was placed under contract during the previous biennium and it was about two-thirds complete at the close of that period. The remaining work was finished during the early summer of 1929, approximately four months prior to the specified completion date.

Further details will be found on page 338 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 7,734.28
Lease of quarry		500.00
Lease of stock pile site		30.00
Reconstructing irrigation ditches		883.83
Constructing and extending culverts		703.59
Constructing tile drains		709.15
Digging drainage ditches		1,567.38
Riprapping fill slopes		805.54
Repairing washouts		514.61
Maintaining completed roadway		56.24
Prospecting for surfacing materials		743.76
Constructing and widening roadbed		4,213.20
Sprinkling surfacing materials		5,473.49
Preparing stock pile sites		181.18
Signs for traffic control		73.16
Logs for bridging Sprague river		80.80
Replacing fence removed to detour traffic		24.75
Contract items as follows:		
Sub-base course surfacing, 32,980 cu. yds. at $2.22	$ 73,215.60	
Base course surfacing, 10,465 cu. yds. at $2.22	23,232.30	
Top course surfacing, 846 cu. yds. at $2.22	1,878.12	
Grade "A" maintenance materials, 4,746 cu. yds. at $1.95	9,254.70	
Grade "B" maintenance materials, 4,780.5 cu. yds. at $1.95	9,321.98	
Grade "C" maintenance materials, 10,599.5 cu. yds. at $1.95	20,669.03	
Filler, 7,092 cu. yds. at 25c	1,773.00	
Filler haul, 13,672.25 yd. mi. at 18c	2,461.01	
Cushion, 5,804.5 cu. yds. at 25c	1,451.13	
Cushion haul, 7,582.5 yd. mi. at 18c	1,364.85	
Stock piling ⅛-inch materials, 344.1 cu. yds. at 40c	137.64	
Extra for change in source of material supply	3,921.26	
Force account items as follows:		
Preparing stock pile sites	604.44	
Constructing roadbed and superelevating curves	1,762.62	
Moving stock piles to provide space for additional materials	299.11	
Furnishing powder for clearing filler pit, Sta. 2250	317.46	
Prospecting quarries	1,466.17	
Moving tents for rock inspectors	63.77	
Maintenance of completed surfacing	94.50	
Removal of rocks from subgrade	115.93	
Hauling surfacing materials past divide point	357.96	
Total amount earned by contractor	$153,762.58	
Deduction for haul adjustment	3,241.66	
Total amount paid to contractor		150,520.92
Grand total cost of project, all state funds		$174,815.88

SEGREGATION OF FUNDS

Expended 1927-28 biennium	$ 79,873.00
Expended 1929-30 biennium	94,942.88
Total of expenditures	$174,815.88

Jenny Creek-Keno Resurfacing

On the Green Springs Highway, from Mile Point 18.05, which point is about 1,000 feet west of the crossing of Jenny Creek, to Mile Point 45.15, which point is the west end of the bridge over the Klamath River at Keno; 27.1 miles of resurfacing, furnishing maintenance materials and widening. The new surfacing is being built 16 feet wide and, including old surfacing, will have a compacted thickness of 6 inches.

Contract No. 1151, awarded February 27, 1930, to Wren & Greenough, of Portland, Oregon. Work commenced April 1, 1930. Estimated cost, $180,000 from state funds. Expenditures to date, $87,155.18. Resident Engineer, P. P. Whitmore.

The progress of the work on this section has been slow due to a very hard, tough rock which makes crushing operations difficult, but the project will probably be finished by December 31, 1930, the specified date of completion.

Lapine-West Forest Boundary Grading

Federal Aid Project No. 136-B

On the Fremont Highway, from Sta. 7659+53.1, which station is at the junction of the Fremont Highway with The Dalles-California Highway, about 1½ miles south of Lapine, to Sta. 7005+70, which station is at the intersection of the Fremont Highway with the west boundary line of the Deschutes National Forest; 12.13 miles of grading, standard 26-foot roadway.

Contract No. 1054, awarded December 19, 1928, to Wm. Endicott, of Madras, Oregon. Work commenced January 1, 1929; completed September 1, 1929. Final cost, $48,491.89. Resident Engineer, A. A. Kirkwood.

The work on this section was relatively light, the line traversing a level wooded plain for most of the distance. A large part of the work was sublet to other contractors. The progress and quality of the work done were very satisfactory.

DETAILED STATEMENT OF EXPENDITURES

Engineeering		$ 5,447.12
Contract items as follows:		
Clearing and grubbing, lump sum	$ 13,800.00	
Common excavation, 104,764.4 cu. yds. at 22c	23,048.17	
Solid rock, 1,142.7 cu. yds. at $1.25	1,428.38	
Overhaul, 27,163.5 yd. sta. at 5c	1,358.18	
12-inch concrete pipe, 1,218 lin. ft. at $1.25	1,522.50	
18-inch concrete pipe, 474 lin. ft. at $2.30	1,090.20	
24-inch concrete pipe, 189 lin. ft. at $3.60	680.40	
Force account items as follows:		
Clearing and burning brush off right-of-way to improve sight distance at crossing of O. T. Ry.	116.94	
Total amount paid to contractor		43,044.77
Grand total cost of project, 1929-30		$ 48,491.89

PARTICIPATION IN COST

	State	*County*	*Government*	*Total*
Expenditures to date	$ 10,670.14	$ 8,545.00	$ 29,276.75	$ 48,491.89
Estimated cost to complete	Cr. 12,459.88	10,900.00	1,559.88	
Estimated total cost	Cr. $ 1,789.74	$ 19,445.00	$ 30,836.63	$ 48,491.89

Klamath Falls-Lakeview Junction Grade Widening

On The Dalles-California Highway, from Sta. 44+00, which point is 0.8 mile south of the south city limits of Klamath Falls, to Sta. 204+00, which point is at the junction of The Dalles-California Highway with the Klamath Falls-Lakeview Highway; 3.17 miles of grade widening.

Contract No. 1073, awarded March 8, 1929, to the W. D. Miller Construction Company, of Klamath Falls, Oregon. Work commenced April 3, 1929; completed August 1, 1929. Final cost, $37,477.16. Resident Engineer, C. C. Seeley.

Due to the heavy traffic carried by this section of highway, a decision was reached that the paving of it was necessary and advisable. However, the original roadbed was constructed several years ago and it was essential that it be reconstructed to modern traffic requirements, prior to the paving of the section. Accordingly, the roadbed was widened to a width of 32 feet on an improved grade line, all sharp curves were flattened and all faulty drainage conditions were corrected. Fills were compacted by watering and rolling operations, this work being done to eliminate future settlement and thus permit the immediate paving of the section.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 4,751.96
Labor and materials furnished by state:		
Reconstructing irrigation ditches		33.00
Constructing and extending culverts		510.57
Constructing and widening roadbed		3,924.79
Maintaining completed sections		55.50
Providing flagmen for control of traffic		42.54
Relocating power pole line		235.56
Tractor rental and supplies deducted from contractor's estimate		115.96
Contract items as follows:		
Clearing and grubbing, lump sum	$ 1,000.00	
Excavation, single classification, 39,117.9 cu. yds. at 35c	13,691.27	
Class "A" concrete, 47,414 cu. yds. at $26.00	1,232.76	
Class "C" concrete, 20.093 cu. yds. at $20.00	401.86	
Overhaul, 18,167 yd. stas. at 5c	908.35	
Truck haul, 18,679 yd. mi. at 30c	5,603.70	
Metal reinforcement, 281.7 lbs. at 10c	28.17	
12-inch concrete culvert pipe, 1,317 lin. ft. at $1.25	1,646 25	
18-inch concrete culvert pipe, 422 lin. ft. at $2.20	928.40	
30-inch concrete culvert pipe, 16 lin. ft. at $5.00	80.00	
36-inch concrete culvert pipe, 31 lin. ft. at $5.90	188.80	
12-inch concrete siphon pipe, 462 lin. ft. at $1.50	693.00	
18-inch concrete siphon pipe, 57 lin. ft. at $2.50	142.50	
6-inch drain tile, 375 lin. ft. at 30c	112.50	
Force account items as follows:		
Moving right-of-way fence	258.17	
Extra work in connection with pipe culverts	439.34	
Removing unsuitable materials from subgrade, and placing it at turnouts	274.19	
Furnishing and placing culvert pipe under turnouts	293.98	
Total amount earned by contractor	$ 27,923.24	
Deduction for rental of state equipment and for materials furnished	115.96	
Total amount paid to contractor		27,807.28
Grand total cost of project, all state funds, 1929-30		$ 37,477.16

Dairy-Bly Mountain Grading

On the Klamath Falls-Lakeview Highway, from Sta. 0+00, which station is about 1,500 feet west of the Dairy postoffice, to Sta. 488+15.9, which station is approximately 3 miles west of the Bly Mountain summit; 8.49 miles of grading. The grading was done on the standard 26-foot roadbed section.

Contract No. 1055, awarded December 19, 1928, to the Johnson Brothers Company, of Klamath Falls, Oregon. Work commenced February 18, 1929; completed August 30, 1929. Final cost, $65,493.58. Resident Engineer, Jos. G. Toole.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 7,154.30
Labor and materials furnished by state:		
Sprinkling subgrade		311.14
Signs and traffic control		28.52
Contract items as follows:		
Clearing and grubbing, lump sum	$ 3,630.00	
Excavation, west unit, 75,811.2 cu. yds. at 38c	28,808.26	
Excavation, east unit, 17,243.1 cu. yds. at 53c	9,134.07	
Overhaul, 93,493 yd. sta. at 2c	1,869.86	
12-inch corrugated iron pipe, 256 lin. ft. at $1.60	409.60	
18-inch corrugated iron pipe, 1,350 lin. ft. at $2.10	2,835.00	
24-inch corrugated iron pipe, 550 lin. ft. at $2.70	1,485.00	
36-inch corrugated iron pipe, 216 lin. ft. at $5.20	1,123.20	
18-inch corrugated iron siphon pipe, 50 feet at $2.50	125.00	
24-inch corrugated iron siphon pipe, 124 lin. ft. at $3.10	384.40	
Class "A" concrete, 46.84 cu. yds. at $30.00	1,405.20	
Class "B" concrete, 26 cu. yds. at $20.00	520.00	
Metal reinforcement, 2,369 lbs. at 7c	165.83	
Lumber and timber, 36.318 M-FBM at $65.00	2,360.67	
Dry rubble, 237.66 cu. yds. at $3.00	712.98	
Dry rubble haul, 266.81 yd. ½ mi. at 15c	40.02	
Force account items as follows:		
Prospecting for surfacing materials	2,677.47	
Constructing head gates and platform for irrigation ditches	139.87	
Excavating bridge footing test holes	70.69	
Repairing siphon basins	102.50	
Total amount paid to contractor		57,999.62
Grand total cost of project, all state funds, 1929-30		$ 65,493.58

Klamath Section Forest Road Project

This project is located on the Fremont Highway, within the forest reserve, beginning at the west forest boundary and extending southeasterly a distance of 8.30 miles, 6 miles lying in Klamath County and 2.3 miles in Lake County. A contract for grading on this section was let by the United States Bureau of Public Roads in the summer of 1928 to Wm. Endicott of Madras. The project was completed October 3, 1929, at a total cost of $49,000.85 from government funds.

Further details will be found on page 342 of the 1927-28 report.

Bly-Forest Boundary Grading

On the Klamath Falls-Lakeview Highway, from Sta. 2147+25.6, which station is in Bly, east to Sta. 2601+00, which station is near the west boundary of the Fremont National Forest; 8.01 miles of grading.

Contract No. 1017, awarded November 29, 1927, to W. C. Elliott, of Portland, Oregon. Work commenced February 1, 1928; completed October 31, 1928. Final cost, $87,608.87. Resident Engineer, Jos. G. Toole.

Work on this project was practically complete at the close of the previous biennium and is described in considerable detail on page 342 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 8,105.68
Labor and materials furnished by state:		
Placing of riprap along bank		455.58
Signs for traffic control		7.50
Lumber for repairing bridge on old road		32.00
Paving bridge deck		221.22
Seeding fill slopes		67.69
Contract items as follows:		
Clearing and grubbing, lump sum	$ 1,000.00	
Class "A" excavation, 28,142 cu. yds. at 60c	16,885.20	
Class "B" excavation, 6,358.5 cu. yds. at 80c	5,086.80	
Class "C" excavation, 7,212.7 cu. yds. at $1.50	10,819.05	
Overhaul, 11,664 yd. sta. at 5c	583.20	
Special sand borrow, 36,803.8 cu. yds. at 60c	22,082.28	
Truck haul, 28,755.2 yd. mi. at 30c	8,626.56	
Timber piling, 1,112 lin. ft. at $1.00	1,112.00	
Lumber and timber, 72.869 M-FBM at $70.00	5,100.83	
18-inch concrete pipe, 954 lin. ft. at $2.00	1,908.00	
24-inch concrete pipe, 240 lin. ft. at $3.00	720.00	
36-inch concrete pipe, 404 lin. ft. at $6.00	2,424.00	
Dry rubble rock, 103.56 cu. yds. at $15.00	1,553.40	
Force account items as follows:		
Constructing concrete footings for pile trestle	323.91	
Removal of large rocks for use on riprap	493.97	
Total amount paid to contractor		78,719.20
Grand total cost of project		$ 87,608.87

PARTICIPATION IN COST

	State	*County*	*Total*
Expended 1927-28 biennium	$ 48,943.79	$ 22,880.77	$ 71,824.56
Expended 1929-30 biennium	12,425.35	3,358.96	15,784.31
Total expenditures	$ 61,369.14	$ 26,239.73	$ 87,608.87

Klamath River Bridge

Federal Aid Project No. 84-B

On the Green Springs Highway at Keno; three 100-foot concrete through arch spans, two 30-foot approach spans, with 24-foot clear roadway and two 4-foot sidewalks.

Contract No. 1176, awarded March 27, 1930, to Clackamas Construction Co., of Oregon City, Oregon. Work commenced April 11, 1930. Estimated cost, $57,000, consisting of $22,985.71 from state funds and $34,014.29 from government funds. Expenditures to date have amounted to $35,069.51, of which the state has expended $26,494.91 and the government $8,574.60. Resident Engineers, R. G. Barnes until August, 1930, and Frank Moore subsequent to August, 1930.

This bridge replaces a narrow steel bridge. The work is proceeding on schedule and the structure should be in use by January 1, 1931.

Altamont Canal Bridge

On The Dalles-California Highway to 1.4 miles south of Klamath Falls; two 26-foot and one 36-foot continuous concrete spans, with 30-foot clear roadway and two 5-foot sidewalks.

Contract No. 1134, awarded October 30, 1929, to J. L. Quinn, of Klamath Falls, Oregon. Work commenced December 10, 1929; completed March 19, 1930. Final cost, $12,091.43. Resident Engineer, L. C. Smitton.

This structure is part of the widening and paving project from Klamath Falls to the Lakeview Junction on The Dalles-California Highway. It replaces a narrow timber span at the same site. The work on this bridge was carried on during the cold winter weather to take advantage of the fact that the water is turned out of the Altamont Canal during the winter.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,304.88
Labor and materials furnished by state:		
Riprapping		508.41
Grading approaches		186.35
Contract items as follows:		
Excavation, 175.52 cu. yds. at $1.80	$ 315.94	
Excavation below elevation, 1.2 cu. yds. at $1.90	2.28	
Class "A" concrete, 122.75 cu. yds. at $21.85	2,682.09	
Class "D" concrete, 101.61 cu. yds. at $23.35	2,372.59	
Metal reinforcement, 35,813 lbs. at 5c	2,790.65	
Concrete handrail, 190.44 lin. ft. at $4.95	942.68	
Removal of old bridge and maintenance of traffic, lump sum	842.00	
Addition for cement adjustment	114.70	
Force account item:		
Erecting temporary office for engineer	28.86	
Total amount paid to contractor		10,091.79
Gross total cost of project, all state funds, 1929-30		$ 12,091.43

Addition to Klamath Falls Building

On The Dalles-California Highway approximately one mile south of the Klamath Falls city limits; 48 by 68-foot addition to the present building which was built in 1926.

Contract No. 1206, awarded June 26, 1930, to Cherry & Harrison, of Klamath Falls, Oregon. Work commenced July 8, 1930; completed October 4, 1930. Final cost, $4,260.96. Resident Engineers, R. G. Barnes and Frank Moore.

This 48-foot addition to the present shop building was built during the summer of 1930. This addition is of the same type as the main building constructed in 1926. Maintenance and construction equipment used in southern and central Oregon is serviced and maintained at the Klamath Falls shop.

Maintenance

At the close of the present biennium there was a total of 257.82 miles of state highways under maintenance in this county, consisting of 3.91 miles of concrete pavement, 44.03 miles of bituminous macadam, 128.85 miles of oiled macadam, 67.85 miles of untreated macadam, and 13.18 miles of earth roads. Over this entire mileage the usual maintenance operations have been carried on by patrol crews stationed at Lapine, Chemult, Sand Creek, Fort Klamath, Klamath Falls, Spencer Station, Merrill, Dairy and Ely.

The maintenance work has consisted mainly of the usual blading of macadam roads, patching of oiled roads, removal of snow and slides, cutting and burning of weeds and brush, repairing and rebuilding guard fences, etc. In many places side ditches have been widened and deepened to secure better drainage, resulting in improved and less expensive maintenance of the roadway.

Minor betterment work has consisted of the felling of dangerous trees along the right of way and the oiling of 1.5 miles of the Fremont Highway. This 1.5-mile section was in the nature of an experiment, the natural material in the road being mixed with oil without any rock foundation. The work appears favorable but insufficient time has lapsed to form a definite opinion of its value.

Oiled surface treatment has been applied to 47.18 miles of rock and gravel surfacing and 40.4 miles of oiled macadam have been reoiled.

The maintenance work in this county on The Dalles-California Highway north of Crescent, and on the Fremont Highway, has been in charge of W. S. Hodge, Resident Maintenance Engineer, with headquarters at Bend. All other maintenance work in the county has been in charge of C. C. Seeley, Resident Maintenance Engineer, with headquarters at Klamath Falls.

During the biennium, the total amount expended for general maintenance work in the county has been $304,142.03, and minor betterment expenditures for this period have been $32,078.30.

Sand Creek Section Maintenance Materials

This work was let by the United States Bureau of Public Roads as part of the Forest Road contract to the Milne Construction Company for the construction of the Sand Creek-Park Boundary surfacing adjacent to The Dalles-California Highway. Work consisted of furnishing 9,750 cubic yards of crushed rock in stockpiles on The Dalles-California Highway at the Sand Creek-Park Boundary Highway junction and at a point 6½ miles north of the junction.

The cost of this material has amounted to $27,013.02, expended from state funds, of which $21,013.02 has been classified as betterment for bituminous macadam construction, and $6,000 has been carried as a special maintenance item.

Keno-Klamath Falls Resurfacing

On the Green Springs Highway, from Mile Point 45.0, which point is in the town of Keno, east to Mile Point 56.15, which point is at the south or west corporate limits of the city of Klamath Falls; 11.15 miles of resurfacing and the furnishing of maintenance materials in stockpiles. Width of surfacing, 18 feet; compacted thickness, new and old surfacing, approximately 8 inches.

Contract No. 1008, awarded October 25, 1927, to Simonsen & Hefty, of Portland, Oregon. Work commenced May 10, 1928; completed April 24, 1929. Final cost, $71,183. Resident Engineer, C. C. Seeley.

The original surfacing on this section having been under traffic for several years, it was deemed necessary, prior to the constructing of an oiled macadam, to reinforce the worn surfacing with new materials. Accordingly, a contract was awarded in October, 1927, for the resurfacing of the section and likewise for the production and stockpiling of broken stone for the contemplated oiling work. Difficult quarry conditions were encountered on the project and the resulting slow production of materials required the length of time for completion to be considerably longer than anticipated.

Further details will be found on page 342 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 8,862.39
Rental of state equipment deducted from contractor's estimate		47.52
Royalty on rock		2,980.86
Purchase and lease of stock pile sites		255.75
Removing old structures		62.40
Extending and constructing culverts		2,772.76
Constructing tile drains		76.98
Digging drainage ditches		542.17
Prospecting for surfacing materials		716.89
Widening roadbed		1,487.30
Sprinkling surfacing materials		6,059.54
Furnishing and placing filler materials		221.20
Preparing stock pile sites		18.94
Signs and detours for traffic control		58.13
Credit for material used on other projects Cr.		8,231.45
Contract items as follows:		
Base course resurfacing, 13,722.6 cu. yds. at $1.75	$ 24,014.55	
Top course resurfacing, 3,851.5 cu. yds. at $1.90	7,317.85	
Grade "A" maintenance materials, 2,411.3 cu. yds. at $2.10	5,063.73	
Grade "B" maintenance materials, 2,412.3 cu. yds. at $2.00	4,824.60	
Grade "C" maintenance materials, 6,426.5 cu. yds. at $1.85	11,889.03	
Filler, 1,058.4 cu. yds. at 40c	423.36	
Filler haul, 1,506.9 yd. mi. at 20c	301.38	
Stock piling rejected fines, 972.9 cu. yds. at 40c	389.08	
Force account items as follows:		
Widening and superelevating curves	1,333.99	
Preparation of stock pile sites	135.38	
Prospecting Keno quarry for maintenance materials	1,533.62	
Total amount earned by contractor	$ 57,226.57	
Deductions:		
Material and truck hire furnished by state	47.52	
Haul adjustment	1,927.43	
Total amount paid to contractor		55,251.62
Grand total cost of project, all state funds		$ 71,183.00

SEGREGATION OF FUNDS

Expended 1927-28 biennium	$ 41,182.77
Expended 1929-30 biennium	30,000.23
Total of expenditures	$ 71,183.00

Klamath Falls-Merrill-Olene Resurfacing

On The Dalles-California and Klamath Falls-Lakeview Highways, on The Dalles-California Highway from Mile Point 288.4, which mile point is about one mile south of the south city limits of Klamath Falls, to Mile Point 305.5, which mile point is in Merrill. On the Klamath Falls-Lakeview Highway, from Mile Point 0.0 at the junction with The Dalles-California Highway, to Mile Point 4.3; 21.4 miles of resurfacing. The resurfacing was 18 feet wide and, with old rock on the road, a compacted thickness of 8 inches has been obtained.

Contract No. 1024, awarded December 20, 1927, to John Hampshire, of Grants Pass, Oregon. Work commenced April 12, 1928; completed February 10, 1929. Resident Engineer, C. C. Seeley.

[KLAMATH]

The contract covering this project was awarded during the previous biennium and the work was nearly complete at the end of that period. A descriptive article covering this work will be found on page 341 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 10,636.72
Equipment rental deducted from contractor's estimate		351.16
Supplies furnished to contractor and deducted from his estimate		50.40
Purchase of quarry sites		100.00
Royalty on rock		1,000.00
Purchase of stock pile sites		1,328.75
Constructing approach roads		50.50
Constructing and extending culverts		1,119.69
Constructing tile drains		210.29
Digging drainage ditches		409.01
Prospecting for surfacing materials		2,746.63
Widening roadbed		260.53
Hauling and stockpiling maintenance materials		58.10
Sprinkling surfacing materials		7,601.19
Preparing stock pile sites		289.21
Watchman and signs for traffic control		288.69
Credit for materials used at Klamath Falls shops	Cr.	493.50
Credit for materials transferred to betterment work	Cr.	38,646.76
Contract items as follows:		
Embankment gravel, 652.5 cu. yds. at 85c	$ 554.63	
1½" crusher run, 526.1 cu. yds. at $2.50	1,315.25	
Extra processing, 14.2 mi. at $12.50	177.50	
Base course resurfacing, 22,821 cu. yds. at $2.65	60,475.65	
Top course resurfacing, 4,740 cu. yds. at $2.80	13,272.00	
Grade "A" maintenance materials, 7,256.9 cu. yds. at $2.59	18,795.37	
Grade "B" maintenance materials, 7,788.8 cu. yds. at $2.50	19,472.00	
Grade "C" maintenance materials, 17,191 cu. yds. at $2.50	42,977.50	
Grade "D" maintenance materials, 908.6 cu. yds. at $2.45	2,226.07	
Filler, 1,422.5 cu. yds. at 30c	426.75	
Filler haul, 2,963.5 cu. yds. at 18c	533.43	
Adjustment for extra freight and truck haul	2,548.42	
Force account as follows:		
Preparation of stock pile sites	151.24	
Widening and superelevating of curves	2,098.47	
Widening and superelevating of curves on extension of contract	2,665.88	
Total amount earned by contractor	$167,690.16	
Deductions:		
For haul adjustment	3,458.34	
Supplies	401.56	
Total amount paid to contractor		163,830.26
Grand total cost of project, all state funds		$151,190.87

SEGREGATION OF FUNDS

Expended 1927-28 biennium	$ 76,694.03
Expended 1929-30 biennium	74,496.84
Total of expenditures	$151,190.87

DETAIL OF BETTERMENT ITEMS TRANSFERRED

Grade "A" maintenance materials, 3,464 cu. yds. at $2.59	$ 8,971.76
Grade "B" maintenance materials, 3,750 cu. yds. at $2.50	9,375.00
Grade "C" maintenance materials, 7,238 cu. yds. at $2.50	18,095.00
Grade "D" maintenance materials, 900 cu. yds. at $2.45	2,205.00
	$ 38,646.76

Klamath Falls-North Survey

This survey consisted of a relocation from the north city limits of Klamath Falls to two miles north. The location was made direct as a preliminary was not necessary. This survey was made under the direct supervision of Resident Engineer P. P. Whitmore, during February and March, 1930, being carried on with other survey and construction work in this vicinity.

Merrill-California State Line Survey

This survey has been made for the purpose of draining and widening the section from Merrill to the California state line. Due to the fact that the country through which the existing road runs is a flat irrigated tract and was originally a lakebed, it has been necessary to make a very complete survey on account of drainage. The survey included a profile of the center of the existing road, a profile of the bottom of each borrow pit or side ditch, and profiles of the proposed location of drainage ditches off the right of way. The widening and draining of this section is necessary for the purpose of putting the roadbed in shape for a rock resurface on which to lay bituminous macadam.

The survey work was done under the supervision of Resident Engineer C. C. Seeley during the period from December, 1929, to April, 1930, and covered a total distance of 12.89 miles between terminal points.

Klamath Falls-Lakeview Junction Survey

The relocation survey on this section was made in June, 1928. A revision of a portion of the line and adjustments in the final grade line were made by Resident Engineer C. C. Seeley and party during January and February, 1929, just prior to the date of awarding the contract for widening in March.

Further details may be found on page 344 of the 1927-28 report.

Jackson County Line-Keno Survey

This survey consisted of a revision of the present alignment for straightening and widening the highway. The location was made direct as a reconnaissance had been made and a preliminary was not necessary. This survey was made under the direct supervision of Resident Engineer P. P. Whitmore during the period between July 10, 1929, and January 30, 1930, being carried on with other survey and construction work in this vicinity.

LAKE COUNTY

The major part of the construction activities in Lake County during the past two years has been confined to work in grading and surfacing the Fremont Highway. The grading of the Ana Springs-Hunter Hill section was let in 1928, but was not completed until 1929. Contracts awarded during 1929-1930 included the grading of the following sections of the Fremont Highway: Lakeview-California Line, 5.98 miles, East Forest Boundary-Silver Lake, 19.77 miles and Silver Lake-Picture Rock Pass, 13.53 miles. A contract was let for the surfacing of the Lakeview-California line section, a distance of 15.29 miles and the furnishing of maintenance materials for that section and four miles of the Lakeview-Drews Valley section of the Lakeview-Klamath Falls Highway. State forces also placed temporary surfacing of pit-run gravel on the Ana Springs-Hunter Hill section of the Fremont Highway. All of the above jobs are now completed with the exception of the grading of the Silver Lake-Picture Rock Pass section.

State forces graded 14.38 miles of the Central Oregon Highway within this county, which completed the grading of that road in Lake County.

All construction activities have been done under the direction of C. W. Wanzer, Division Engineer, with headquarters at Bend.

Lakeview-California Line Surfacing

Federal Aid Project No. 143-A

On the Fremont Highway, from mile point 143.50 which is at the north corporate limits of the city of Lakeview, to the Oregon-California State line (mile post 158.79) 15.29 miles of widening, surfacing and furnishing maintenance materials. Surfacing varied in compacted thickness from 6 to 9 inches.

Contract No. 1119, awarded August 29, 1929, to L. F. Ireton, of Klamath Falls, Oregon. Work commenced December 18, 1929. Estimated cost, $107,000. Resident Engineer, B. J. Crowley.

Although the contract on this section was let in the latter part of the summer, there was no work done on the project until the middle of December, 1929. The contractor ran a short time, but due to adverse weather no progress could be made and the work was shut down until February. There was one major change in this job which called for the substitution of sub-base rock for base rock on the part of the project constructed with rock taken from the Red Canyon quarry. This change, made upon the request of the contractor, was mutually beneficial to both the contractor and the state, it being occasioned for the reason that the rock from the Red Canyon quarry broke considerably smaller than anticipated.

The north half, or about eight miles, of the project was completed in July and oil was placed on this section, the oiling work being performed by state forces.

Considerable trouble was experienced by the contractor in producing clean maintenance materials, it being necessary to rescreen most of those produced from the Red canyon quarry. However, when the plant was moved to the Sherrard quarry, his installation of vibratory screens resulted in a satisfactory quality of rock being produced.

The grading work done under the contract was of a minor nature, consisting of cleaning and reconstructing drainage ditches and building up the shoulders of the roadway.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 5,507.71
Labor and materials furnished by state:		
Leases and purchases of land for quarry sites		1,234.00
Purchase of stock pile site		260.00
Maintaining completed portions of surfacing		126.87
Prospecting for surfacing materials		46.19
Sprinkling surfacing		6,463.57
Prepare stock pile sites		300.60
Maintaining detour and provide watchmen		32.79
Contract items as follows:		
Sub-base course surfacing, 30,234 cu. yds. at 95c	$ 28,722.30	
Base course surfacing, 4,660 cu. yds. at 95c	4,427.00	
Top course surfacing, 7,946 cu. yds. at 95c	7,548.70	
Grade "A" maintenance material, 4,605 cu. yds. at 95c	4,374.75	
Grade "B" maintenance material, 6,463 cu. yds. at 95c	6,139.85	
Grade "C" maintenance material, 2,272 cu. yds. at 95c	2,158.40	
Grade "D" maintenance material, 335 cu. yds. at 95c	318.25	
Earth filler, 11,671 cu. yds. at 30c	3,501.30	
Hauling broken stone (truck measure), 102,468 cu. yds. mi. at 16c	16,394.88	
Hauling broken stone (pile measure), 30,175.3 cu. yd. mi. at 18c	5,431.55	
Filler haul, 21,152.8 cu. yd. mi. at 20c	4,230.56	
Excavation, single classification, 8,030 cu. yds, at 30c	2,409.00	
Overhaul, 4,685 yd. sta. at 3c	140.55	
Truck haul, 5,983.7 yd. mi. at 20c	1,196.74	
Screen rejections, 1,550 cu. yds. at 25c	387.50	
Truck haul, screen rejections, 1,744.5 yd. mi. at 18c	314.01	
Force account item:		
Preparing stock pile sites with tractor and blade	75.00	
Total amount earned by contractor	$ 87,770.34	
Deduction for retained percentage	6,560.25	
Total amount paid to contractor		81,210.09
Grand total expended on project, 1929-30		$ 95,181.82

PARTICIPATION IN COST

	State	*Government*	*Total*
Expenditures to date	$ 79,089.62	$ 16,092.20	$ 95,181.82
Estimated cost to complete	Cr. 9,090.17	20,908.35	11,818.18
Estimated total cost	$ 69,999.45	$ 37,000.55	$107,000.00

Ana Spring-Hunter Hill Temporary Surfacing

On the Fremont Highway, from Paisley north to bottom of the grade to Picture Rock Pass; 13.4 miles of temporary gravel surfacing 16 feet in width. Resident Engineer, B. J. Crowley.

As the traffic on this section does not justify a finished surfacing job, it was decided to place gravel on those parts of the road that become muddy during the winter months. Gravel being available at several places along the section, approximately 8,000 cubic yards of this material were hauled and placed by the state maintenance crew located at Paisley.

The results obtained have proven very satisfactory, the section now being available for travel, without inconvenience, throughout the entire year.

Expenditures on this work have amounted to $5,649.81 from state funds.

Klamath-East Forest Boundary Forest Road Project

This project is a continuation of the work begun on the Fremont Highway by the U. S. Bureau of Public Roads in 1928. A contract was let by the Bureau on September 18, 1929, to William Endicott for grading a section 7.7 miles in length from the easterly end of the Klamath Section to the East Forest Boundary. Weather conditions forced the suspension of work during the winter months of 1929-30. The contractor resumed operations in the spring of 1930 and completed the contract July 15, 1930.

Expenditures to date have amounted to $50,083.61 from government funds.

East Forest Boundary-Silver Lake Grading

Federal Aid Project No. 136-C

On the Fremont Highway, from Sta. 5099+00, which station is about one-half mile east of the town of Silver Lake to Sta. 6147+00, which station is at the east boundary of the Deschutes National Forest about 30 miles southeast of Lapine; 19.77 miles of grading. The roadway is 26 feet in width.

Contract No. 1139, awarded December 12, 1929, to Wm. Endicott of Madras, Oregon. Work commenced December 27, 1929. Estimated cost, $70,000 consisting of $29,535 from state funds and $40,465 from government funds. Expenditures to date consist of $28,053.22 from state funds and $26,145.17 from government funds. Resident Engineer, John T. Burch.

Although the contractor began construction immediately after the award of the contract, very little work was done prior to the first of May, this work consisting of a small section at the west end of the project. Subsequent to the first of May, however, the work progressed in a very satisfactory manner. Three subcontractors were used on various parts of the project, but the contractor did the major portion of the grading work with his own forces.

The contract was awarded, contemplating the use of concrete culvert pipe, but at points where pipes were installed as parts of irrigation systems or where they crossed over borrow pits, corrugated galvanized iron pipe was used. Payment for this item was made under a supplemental price agreement.

The right-of-way on this section is 80 feet in width and was secured by the Lake County Court.

Silver Lake-Picture Rock Pass Grading

Federal Aid Project No. 136-D

On the Fremont Highway, from Sta. 5099+00, which station is about one-half mile east of the town of Silver Lake, to Sta. 4438+27.1, which station is at the foot of the Picture Rock Pass grade; 13.53 miles of grading. 26-foot standard roadbed.

Contract No. 1228, awarded September 25, 1930, to the Union Construction Co. of Union, Oregon. Estimated cost, $39,000 consisting of $15,856.74 from state funds and $23,143.26 from government funds. Resident Engineer, John T. Burch.

At this time no expenditures have been made on this project. The contractor's equipment has been shipped in and work will probably be started by October 15. This work will all be done by machinery, consisting of a power shovel and hydraulic fresnos. If the weather is favorable, the job should be completed by December 31, 1930.

Ana Spring-Hunter Hill Grading

Federal Aid Project Nos. 107-C and 136-A

On the Fremont Highway, from Sta. 4120+00 which station is about 17 miles south of the town of Silver Lake, to Sta. 3403+00, which station is about 19 miles north of the town of Paisley; 11.02 miles of grading.

Contract No. 1047, awarded July 10, 1928, to Henry C. Boyer, of Ontario, Oregon. Work commenced July 27, 1928; completed June 11, 1929. Estimated cost, $47,460.96. Resident Engineer, B. J. Crowley.

The contractor finished approximately 65 per cent of the work in the fall of 1928 but was forced to cease operations during the winter months and so did not finish within the specified time. The quality of the work was entirely satisfactory.

Further details will be found on pages 347 and 348 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 4,796.75
Constructing temporary surfacing		65.78
Contract items as follows:		
Clearing and grubbing, lump sum	$ 250.00	
Common excavation, 81,763.4 cu. yds. at 26c	21,258.48	
Solid rock, 13,065.2 cu. yds. at 95c	12,411.94	
Overhaul, 55,682 yd. sta. at 5c	2,784.10	
12-inch corrugated iron pipe, 952 lin. ft. at $1.40	1,332.80	
18-inch corrugated iron pipe, 1,032 lin. ft. at $2.65	2,734.80	
24-inch corrugated iron pipe, 238 lin. ft. at $3.40	809.20	
6-inch porous drain tile, 782 lin. ft. at 55c	430.10	
Broken stone backfill, 154.1 cu. yds. at $1.50	231.15	
Excavation of soft subgrade, 154.1 cu. yds. at 50c	77.05	
Rock backfill, 118.2 cu. yds. at $2.00	236.40	
Force account item as follows:		
Lower sewer and water pipes	42.41	
Total amount paid to contractor		42,598.43
Grand total cost of project		$ 47,460.96

PARTICIPATION IN COST

	State	*Government*	*Total*
Expended 1927-28 biennium	$ 10,718.04	$ 3,421.78	$ 14,139.82
Expended 1929-30 biennium	10,684.14	22,637.00	33,321.14
Total expenditures	$ 21,402.18	$ 26,058.78	$ 47,460.96

Lakeview-California Line Grading

Federal Aid Project No. 143-A

On the Fremont Highway, from Sta. 242+00, which station is about four and one-half miles south of the town of Lakeview, to Sta. 555+51.6, which station is located three miles north of the Oregon-California State Line; 5.98 miles of grading; road bed 26 feet in width.

Contract No. 1091, awarded April 19, 1929, to M. P. Pou, of Lakeview, Oregon. Work commenced May 6, 1929; completed November 1, 1929. Final cost, $27,713.36. Resident Engineer, B. J. Crowley.

[LAKE]

This entire job was done by the contractor's own forces. Considerable difficulty was encountered by the County Court in securing the right-of-way for this section as the line departed from the old road and crossed several cultivated fields. The county had to condemn in several instances and one of the cases has not yet been settled. The right-of-way is 80 feet in width.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 2,987.27
Prospecting for surfacing materials		151.97
Maintaining completed portions of project		243.30
Contract items as follows:		
Clearing and grubbing, all	$ 400.00	
Common excavation, 44,517 cu. yds. at 25c	11,129.25	
Solid rock excavation, 4,210.2 cu. yds. at 95c	3,999.69	
Overhaul, 27,047 yd. sta. at 5c	1,352.35	
12-inch corrugated iron pipe, 1.264 lin. ft. at $1.30	1,643.20	
15-inch corrugated iron pipe, 934 lin. ft. at $1.45	1,354.30	
18-inch corrugated iron pipe, 946 lin. ft. at $1.95	1,844.70	
24-inch corrugated iron pipe, 280 lin. ft. at $2.60	728.00	
30-inch corrugated iron pipe, 87 lin. ft. at $4.25	369.75	
Class "A" concrete, 37.06 cu. yds. at $22.50	833.85	
Metal reinforcement, 3,750 lbs. at 11c	412.50	
Force account item:		
Constructing ditch for drainage and irrigation	263.23	
Total amount paid to contractor		24,330.82
Grand total cost of project, 1929-30		$ 27,713.36

PARTICIPATION IN COST

	State	*County*	*Government*	*Total*
Expenditure to date	$ 10,067.75	$ 6,082.71	$ 11,562.90	$ 27,713.36
Estimated cost to complete	Cr. 1,531.13		1,531.13	
Estimated total cost	$ 8,536.62	$ 6,082.71	$ 13,094.03	$ 27,713.36

Deschutes County Line-Harney County Line Grading

Federal Aid Project No. 148-C

On the Central Oregon Highway, from the Descutes-Lake County line which is 14 miles east of Hampton, across Lake County to the Lake County-Harney County line which is 8 miles west of the Gap Ranch; 14.38 miles of grading; standard 26-foot road bed.

Work commenced July 1, 1929; completed December 31, 1929. Final cost, $47,582.81. Resident Engineer, J. A. Runge.

This section of the Central Oregon Highway was constructed with state forces using heavy tractors, hydraulic fresnos and graders. The road traverses a fairly level country and the type of equipment used was ideal for the nature of the work. The road bed section built is what is locally called a "grader section." The road bed is 26 feet in width with 9-foot ditches on each side. The right of way is 80 feet in width and was secured by Lake County.

Maintenance

There are now under maintenance 137.88 miles of highways in Lake County, of which there are 12.52 miles of oiled macadam, 89.93 miles of untreated macadam, .76 miles of bituminous macadam, and 34.67 miles of earth road.

The first oiling in Lake County was done in 1930, consisting of 8.97 miles on the Fremont Highway and 4.46 miles on the Klamath Falls-Lakeview Highway.

Traffic not being heavy in this county, only two maintenance crews have been required, one stationed at Lakeview and the other one located at Paisley. These two crews have also performed all minor betterment work with the exception of the oiling. This minor betterment work has consisted of widening of the roadway and the addition of pit-run gravel to the surfacing.

All maintenance work in this county has been handled by B. J. Crowley, Resident Maintenance Engineer, who is stationed at Lakeview, except 9.59 miles on the Klamath Falls-Lakeview Highway from Drews Valley to the Klamath County line, which section has been in charge of C. C. Seeley, Resident Maintenance Engineer, with headquarters at Klamath Falls.

During the biennium the total expenditures in the county for general maintenance and minor betterment have been $85,209.89 and $7,373.93 respectively.

Storage Building at Paisley

On the Fremont Highway in the town of Paisley; 28x48-foot standard frame maintenance storage shed.

Contract No. 1122, awarded August 29, 1929, to J. J. Cunningham, of Bend, Oregon. Work commenced September 3, 1929; completed October 31, 1929. Final cost, $2,831.13 from state funds. Resident Engineer, B. J. Crowley.

This building was erected on a lot purchased from C. F. Snider in September, 1926, at a cost of $100. The building will provide storage facilities for maintenance equipment.

East Forest Boundary-Picture Rock Pass Survey

The work done on this survey during this biennium was the relocation of two sections, one on the east end of Silver Lake and the other one at the westerly edge. The first change was made for the purpose of improving the alignment and the other one was made to avoid right of way troubles. The survey was under the supervision of Resident Engineers A. A. Kirkwood and John T. Burch, and covered a total distance of 16.23 miles.

LANE COUNTY

Progress on state highway construction in Lane County has been much faster the past biennium than during the previous one. On the Roosevelt Coast Highway, which crosses the western end of the county, only six miles had been graded prior to 1929. All the remaining grading, 24.7 miles, has been, or will be placed under contract, by the end of 1930, with completion date set for December 31, 1931. It is also planned to let a contract during November or December for a macadam surface on a ten mile section from Berry Creek to Florence.

On the Siuslaw Highway, all sections involving railroad changes between Rainrock and Cushman are being graded under direction of the Bureau of Public Roads, and a 12.3 mile section from Greenleaf Creek to Low Pass Summit has been resurfaced and oiled.

On the Willamette Highway, the grade has been finished to within 6 miles of Oakridge, and surfaced from Lowell to the Black Canyon section.

On the McKenzie Highway, grading has been finished from Springfield to Doyle Hill and 21 miles of widening and resurfacing from Nimrod to Belknap Springs Road, is under way. Surfacing from Springfield to Hendricks Bridge has been completed and is under contract from Hendricks Bridge to Doyle Hill. Bituminous macadam has been laid on a 3.5 mile section east from Springfield. Concrete bridges have been built over Indian Creek, Gate Creek, Camas Swale and the outlets of Siltcoos and Sutton Lakes, and a beautiful concrete and steel bridge has been constructed at McKenzie Bridge.

All state construction work in the county, has been under the supervision of J. S. Sawyer and E. A. Collier, successive Division Engineers, with headquarters at Salem.

The Eugene Oiling Project

Federal Aid Project No. 117-F

Section No. 1.

On the Santiam Highway, extending from Mile Point 13.95 at the east city limits of the town of Lebanon, east to Mile Point 31.63 at the foot of Shea's Hill near the town of Lebanon; 17.68 miles of bituminous macadam wearing surface.

Section No. 2.

On the Pacific Highway, extending from Mile Point 62.2 about 8 miles south of Salem, to Mile Point 96.35, just south of the town of Halsey; 30.11 miles of non-skid wearing surface.

Section No. 3.

On the Corvallis-Newport Highway extending from Mile Point 51.34 at the junction with the Alsea Highway immediately west of the town of Philomath, to Mile Point 56.65 at the west corporate limit of the city of Corvallis; 2.1 miles of crushed gravel resurfacing between Mile Point 51.34 and Mile Point 53.35 and the construction of 5.31 miles of bituminous macadam wearing surface, extending over the entire section.

Section No. 4.

On the Willamette Highway, extending from Mile Point 4.29, approximately four miles east of Goshen to Mile Point 12.33, which point is about two miles west of the town of Lowell; 8.4 miles of oil mat surface treatment.

Section No. 5.

On the McKenzie Highway extending from Mile Point 1.06 at the east city limits of the town of Springfield, to Mile Point 41.33 at Blue River; 8.21 miles of bituminous macadam wearing surface and 6.95 miles of oil mat surface treatment, no work being contemplated between Mile Points 9.27 and 10.23, between Mile Points 11.08 and 11.18, or between Mile Points 11.28 and 35.33.

Contract 1188, awarded April 30, 1930, to F. J. Kernan of Reedsport, Oregon. Work commenced June 2, 1930. Estimated cost, $190,000, consisting of $170,892.45 from state funds and $19,107.55 from government funds. Expenditures to date, $74,661.39 from state funds.

Resident Engineer on sections 1, 2 and 3, I. A. DeFrance with headquarters at Corvallis; Resident Engineer on sections 4 and 5, Raymond Walsh with headquarters at Eugene.

Lowell-Goodman Creek Forest Road Surfacing

On June 5, 1930, the Bureau of Public Roads received bids for surfacing a section of the Willamette Highway from Lowell easterly, a distance of 13.1 miles, embracing the project graded by the state from Lowell to Goodman Creek and the project graded by the Bureau designated the Goodman Creek Section. The contract was awarded to A. Milne of Portland, Oregon. The work has progressed satisfactorily, the contractor having placed sub-base rock over the entire project so that it can be traveled during the winter season. The contractor is planning to make a change in his set-up and produce crushed gravel for the remainder of his contract. At the time of this report the project is 55 per cent complete.

The completed project is estimated to cost $83,000 of which the state will cooperate $47,000 and the government $36,000. Expenditures to date amount to $36,352.11, consisting of $20,000 of state funds and $16,352.11 of government funds.

Springfield-Cogswell Hill Surfacing

Federal Aid Project No. 117-F

On the McKenzie Highway, from Sta. 94+88, which station is at the east corporate limit of the City of Springfield, east to Sta. 485+50, which station is about 3.3 miles east of the town of Thurston. 7.40 miles of crushed gravel surfacing, 20 feet wide and 12 inches thick, and furnishing approximately 8,200 cubic yards of crushed rock for maintenance and betterment purposes.

Contract No. 1101, awarded June 29, 1929, to Cochran Construction Company, of Portland, Oregon. Work commenced August 26, 1929. Estimated cost, $70,000, consisting of $8,304.12 from state funds, $26,000 from county funds and $35,695.88 from government funds. Expenditures to date are $18,856.41 from state funds, $18,690.41 from county funds and $18,260.82 from government funds. Resident Engineer, H. W. Libby.

The surfacing of this section, which was undertaken after the grading project had been completed, was begun in August, 1930, crushed gravel being produced from a pit located about one-half mile north of Thurston. Considerable trouble was experienced in obtaining a satisfactory binding of this material and the use of some earth filler was required. It was planned to complete the project in 1930, and to construct a bituminous macadam surface during the same season, but due to the slow progress made, only 3.5 miles, on the west end of the project were completed in sufficient time to permit the contemplated oiling work. This work was done under the Eugene Oiling Project and is described in a separate article in this report.

Junction City-Eugene Non-Skid Surfacing

On the Pacific Highway, from Mile Point 109.48 at Junction City to Mile Point 121.96 at the north corporate limit of Eugene; 12.48 miles of non-skid surface treatment of asphaltic concrete pavement. Work performed by state oiling crew under Foreman O. C. Yocum during June, 1930. Stockpiled materials used in this job were produced under state contract No. 1163, unit 4, Willamette Valley Rock Production Project. Expenditures to date have amounted to $14,019.34 from state funds. Resident Engineer, Raymond Walsh.

Benton County Line-Junction City Non-skid Surfacing

On the West Side Pacific Highway, from Mile Point 106.49 at the Benton-Lane County Line to Mile Point 112.24 at Junction City; 5.75 miles of non-skid surface treatment on asphaltic concrete pavement. Work performed during August, 1930, by state oiling crew under Foreman O. C. Yocum. Final cost, $6,528.48 from state funds. Resident Engineer, I. A. DeFrance.

Rock for this work was stockpiled under unit 4, of the Willamette Valley Rock Production Contract.

Springfield Bridge Approaches Bituminous Macadam

On the McKenzie Highway, from the Pacific Highway Junction to the west end of the Springfield Bridge and from the east end of the bridge to the west end of bituminous pavement on Main street of Springfield; 0.31 mile of bituminous macadam 4¾ inches thick and 24 feet wide, making a total of 4,500 square yards of surface. Work performed by state oiling crew under O. C. Yocum, during June, 1930. Total cost, $5,290.48 from state funds. Resident Engineer, Raymond Walsh.

Unit No. 4, Willamette Valley Rock Production Project

On the Pacific Highway, from Junction City to Eugene, and on the West Side Pacific Highway from a point about eight miles south of Corvallis to Junction City; furnishing crushed gravel 1¼-inch to ¾-inch, and ¾-inch to ¼-inch, for use by the state in non-skid treatment of bituminous pavement.

Contract No. 1163, awarded March 12, 1930, to the Eugene Sand & Gravel Company, of Eugene, Oregon. Work commenced March 20, 1930. Expenditures to date, $18,359.58 from state funds. Resident Engineer, Raymond Walsh.

Progress was somewhat behind schedule on this project as the contractor's output was diverted to other state projects. However, approximately 7,600 cubic yards of materials had been produced at the close of this biennium and it is anticipated that the furnishing of the remaining materials, amounting to about 5,000 cubic yards will be done prior to the close of 1930.

Berry Creek-Sutton Lake Grading

Federal Aid Project No. 144-E

On the Roosevelt Coast Highway, from Sta. 536+30, which station is 1800 feet north of the crossing of Berry Creek, about 10 miles north of the town of Florence, south to Sta. 321+00, which station is at the crossing of the outlet of Sutton Lake, about six miles north of Florence. 3.90 miles of grading, 24 foot roadbed between ditches.

Contract No. 1186, awarded April 30, 1930, to Earl McNutt of Eugene, Oregon. Work commenced April 26, 1930. Estimated cost $118,000, consisting of $34,503.68 from state funds, $13,000 from county funds and $70,496.32 from government funds. Expenditures to date $43,613.71 from state funds. Resident Engineer, E. E. Umphlette.

Excellent progress is being made on this project and it is very probable that the work will be completed somewhat ahead of the specified completion date which is March 31, 1931. The equipment used by the contractor includes three sixty caterpillar tractors with scrapers and one sixty caterpillar tractor with a bulldozer.

Glenada Section Grading

Federal Aid Project No. 144-B

On the Roosevelt Coast Highway, from Sta. 10+30, which station is at the shore of the Siuslaw River in the town of Glenada to Sta. 72+20, which station is on the Glenada-Siltcoos road at a point about one mile south of Glenada; 1.17 miles of grading and the construction of a ferry slip; 28-foot roadbed from Sta. 11+26 to Sta. 48+50; 32-foot roadbed from Sta.48+50 to Sta. 72+20.

Contract No. 1126, awarded September 26, 1929, to the Yunker-Wiecks Company of Toledo, Oregon. Work commenced October 28, 1929; completed May 15, 1930. Final cost, $28,136.53. Resident Engineer, E. E. Umphlette.

It being planned to continue the operation of a ferry crossing on the Siuslaw River until such time as traffic will require the construction of a bridge, a project was undertaken to construct a new ferry slip at Glenada and a short section of highway south from that point. The ferry slip is located just east of the proposed bridge crossing of Siuslaw Bay and is connected to the permanent highway with a short section of temporary roadway constructed on a 9 per cent grade.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,931.00
Labor and materials furnished by state:		
Iron pipe for draining spring in subgrade		10.00
Digging drainage ditches		39.20
Placing riprap		40.17
Construction signs for traffic control		13.50
Building ferry slip apron		243.54
Constructing temporary surfacing		795.13
Contract items as follows:		
Clearing and grubbing, all	$ 1,725.00	
Excavation, single classification, 41,938.4 cu. yds. at 30c	12,581.52	
Boom logs, 242 lin. ft. at 40c	96.80	
Overhaul, 45,552 yd. stas. at 3c	1,366.56	
Truck haul, 1,422 yd. mi. at 20c	284.40	
Riprap, 60.4 cu. yds. at $2.00	120.80	
Port Orford cedar piling, 3,314 lin. ft. at 60c	1,988.40	
Lumber and timber, 10,704 M-FBM at $45.00	481.68	
Trestle superstructure, 190 lin. ft. at $11.00	2,090.00	
60-ft. truss span, lump sum	1,100.00	
30 ft. by 50 ft. float, lump sum	2,300.00	
18-inch concrete pipe, 432 lin. ft. at $2.00	864.00	
Force account items:		
Extra work required to properly balance float	28.31	
Salvaging and placing concrete pipe	36.52	
Total amount paid to contractor		25,063.99
Grand total cost of project, 1929-30		$ 28,136.53

PARTICIPATION IN COST

	State	*County*	*Government*	*Total*
Expenditures to date	$ 15,604.54	$ 12,531.99	$..........	$ 28,136.53
Estimated cost to complete	Cr. 11,490.37	571.27	10,919.10	....
Estimated total cost	$ 4,114.17	$ 13,103.26	$ 10,919.10	$ 28,136.53

Glenada-Douglas County Line Grading

Federal Aid Project No. 144-D

On the Roosevelt Coast Highway, from Sta. 72+20, which station is about one mile south of Glenada, south to Sta. 407+82 equals 1233+57.2, which point is at the Lane-Douglas County line. 6.36 miles of grading, 24-foot roadbed between ditches except from Sta. 72+20 to Sta. 101+50, Sta. 247 to Sta. 265, and Sta. 287 to Sta. 308, where the grade is 32 feet wide.

Contract No. 1153, awarded February 28, 1930, to the Cochran Construction Company, of Portland, Oregon. Work commenced March 18, 1930. Estimated cost, $117,000, consisting of $26,092.38 from state funds, $21,000 from county funds and $69,907.62 from government funds. Expenditures to date are $52,086.62 from state funds, and $6,993.21 from county funds. Resident Engineer, E. E. Umphlette.

At the close of the biennium the contractor had completed work from the north end of the project to Siltcoos Outlet. Several sandy sections have been encountered on the project which have required the placing of a clay topping. This topping has been constructed full width of the roadway and 6 inches thick.

Approaches to Springfield Bridge Grading

Federal Aid Project No. 117-B

On the McKenzie Highway, from Sta. 0+00 to Sta. 7+92, a distance of 0.15 mile on the west end of the bridge, and the approach on the east end of the bridge is 0.07 mile in length and extends from Sta. 18+80 to Sta. 22+50; 0.22 mile of embankment approaches to Springfield Bridge, 40-foot roadbed.

Contract No. 1069, awarded January 29, 1929, to A. C. Matthews, of Eugene, Oregon. Work commenced February 11, 1929; complete November 20, 1929. Final cost, $9,467.40. Resident Engineer, H. W. Libby.

Completion of these approach fills was delayed a considerable length of time on account of a controversy with residents of West Springfield regarding the size of the water-way of the bridge, this controversy resulting in the construction of three additional spans at the west end of the structure. Most of the material used in constructing the fills was taken from a borrow pit located on the Springfield side of the river. A gravel surface was constructed upon the completed embankments 24 feet wide and 8 inches thick. This material was purchased from the Springfield Sand and Gravel Company of Springfield and placed by state forces.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 623.50
Litigation expense in connection with stream waterway		395.00
Placing of riprap along bank slope		524.69
Widening roadbed		54.35
Application of filler		158.50
Removing debris from right-of-way		15.65
Crushed rock surfacing		527.95
Contract items as follows:		
Clearing and grubbing, lump sum	$ 15.00	
Embankment in place, 6,888.6 cu. yds. at 39c	2,686.55	
Embankment hauled from borrow pit, 6,571.9 cu. yds. at 60c	3,943.14	
Force account item as follows:		
Hauling earth for filling along edges and between legs of wye	523.07	
Total amount paid to contractor		7,167.76
Grand total cost of project, all state funds, 1929.30		$ 9,467.40

PARTICIPATION IN COST

	State	*Government*	*Total*
Expended to date	$ 9,467.40		$ 9,467.40
Estimated cost to complete	Cr. 4,548.47	4,548.47	
Estimated total cost	$ 4,918.93	$ 4,548.47	$ 9,467.40

Springfield-Cogswell Hill Grading

Federal Aid Project No. 117-F

On the McKenzie Highway, from Sta. 94+88, which station is at the east corporate limit of the city of Springfield, to Sta. 485+50, which station is on the present traveled route of the McKenzie Highway at a point about 3.3 miles east of the town of Thurston; 7.40 miles of grading 30-foot roadbed.

Contract No. 1074, awarded March 8, 1929, to the Cochran Construction Company of Portland, Oregon. Work commenced March 19, 1929; completed February 15, 1930. Final cost $67,767.08. Resident Engineer, H. W. Libby.

[LANE]

The location and construction of this section of the McKenzie Highway, which extends from Springfield eastward, has resulted in a considerable saving in distance and curvature, in comparison with the county road over which traffic had previously been routed. The work was not of a heavy nature and no unusual features were involved, except a slide occurring during construction on Cogswell Hill which required the removal of a large quantity of clay and rock. Further trouble developed at this point after the contractor had finished, which necessitated the grade to be raised four feet and the installation of approximately 1,000 lineal feet of drain tile. This subsequent work was performed by state forces.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 5,081.17
Labor and materials furnished by state:		
Constructing approach roads		33.25
Constructing and extending culverts		509.51
Constructing tile drains		554.13
Removing slides		5,818.25
Digging drainage ditches		120.00
Moving and resetting fence around slide		32.73
Permission to remove four trees near race dam to permit movement of repair equipment		100.00
Contract items as follows:		
Station 94+88 to 454+50*		
Clearing and grubbing, all	$ 3,060.00	
Excavation, west unit, 50,668.8 cu. yds. at 30c	15,200.64	
Excavation, east unit. 38,197.8 cu. yds. at 42c	16,043.08	
Overhaul, 94,619.6 yd. stas. at 3c	2,838.59	
Truck haul, 7,356.8 yd. mi. at 18c	1,324.22	
Class "A" concrete, 44.56 cu. yds. at $30.00	1,336.80	
Metal reinforcement, 4,651.5 lbs. at 6c	279.09	
12-inch concrete pipe, 90 lin. ft. at $1.00	90.00	
18-inch concrete pipe, 1,830 lin. ft. at $2.00	3,660.00	
24-inch concrete pipe, 183 lin. ft. at $3.00	549.00	
30-inch concrete pipe, 255 lin. ft. at $5.00	1,275.00	
42-inch concrete pipe, 99 lin. ft. at $7.50	742.50	
Force account items:		
Building bridges for road connections	34.29	
Move 51 lin. ft. of 24-inch culvert pipe	126.54	
Sub-total	$ 46,559.75	
Stations 454+50 to 485+50*		
Clearing and grubbing, all	270.00	
Excavation, 18.498.8 cu. yds. at 42c	7,769.50	
Overhaul, 14,999.5 yd. stas. at 3c	449.99	
Truck haul, 271.1 yd. mi. at 18c	48.80	
12-inch concrete pipe, 33 lin. ft. at $1.00	33.00	
18-inch concrete pipe, 90 lin. ft. at $2.00	180.00	
24-inch concrete pipe, 69 lin. ft. at $3.00	207.00	
Sub-total	$ 8,958.29	
Total amount paid to contractor on entire project		55,518.04
Grand total cost of project, 1929-30		$ 67,767.08

PARTICIPATION IN COST

	State	*County*	*Government*	*Total*
Expenditures to date	$ 11,739.88	$ 23,279.88	$ 32,747.32	$ 67,767.08
Estimated cost to complete	Cr. 7,219.64		7,219.64	
Estimated total cost	$ 4,520.24	$ 23,279.88	$ 39,966.96	$ 67,767.08

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* A division has been made in the project at Sta. 454+50 due to the fact that the county cooperates 50 per cent on the section from Sta. 94+88 to Sta. 454+50 and the state pays the entire cost on the section from Sta. 454+50 to 485+50.

Hendricks Bridge-Doyle Hill Grading

Federal Aid Project No. 117-G

On the McKenzie Highway from Sta. 613+97.2, which station is at the east end of Hendricks Bridge over the McKenzie River about 11 miles east of Springfield, east to Sta. 1113+20, which station is about one mile east of Leaburg; 9.27 miles of grading, 30 foot roadbed between ditches, and topped with 6 inches of pit-run gravel.

Contract No. 1196, awarded May 22, 1930, to Earl L. McNutt, of Eugene, Oregon. Work commenced May 26, 1930. Estimated cost, $93,000, consisting of $7,332.90 from state funds, $43,000 from county funds and $42,667.10 from government funds. Expenditures to date are $31,431.55 from state funds and $19,652.62 from county funds. Resident Engineer, H. W. Libby.

The completion of this project will constitute a material betterment on this section of the McKenzie Highway and a very much needed improvement. A considerable part of the project replaces the old county road which was crooked and narrow. An outstanding example is at O'Brien point, which is now traversed by a long tangent.

In addition to the new grading work involved on this project, there are included the Upper and Lower Deerhorn sections which were originally graded and surfaced in 1922. These sections are being widened and improved to modern traffic requirements.

The contractor is using two shovels and two sixty caterpillar tractors with scrapers. Progress has been very good and the work should be completed before the end of 1930.

Nimrod-Belknap Springs Grade Widening

On the McKenzie Highway, from Nimrod to Yales Ranch, (Belknap Springs Road), 21.0 miles of grade widening and straightening.

Work commenced December 1, 1929. Total expenditures to date have amounted to $20,103.80 from state funds. Resident Engineer, Raymond Walsh.

The east 14-mile portion of this section, where the major part of this work was required, was graded and surfaced several years ago as a forest project; and in preparation for the resurfacing and oil treating of the section, a regrading project was undertaken which consisted of shoulder widening throughout and a few minor line revisions. As the work was comparatively light and scattered over a considerable distance, it was decided to perform the work by state forces.

The roadbed was widened to a width of 22 feet between ditches. At several rock points further improvement was secured by line changes which resulted in considerable reduction in curvature.

Gate Creek Approaches Grading

Federal Aid Project No. 117-D

On the McKenzie Highway, from Sta. 1404+15 to Sta. 1414+50, a distance of about 0.20 of a mile on the west end of the bridge; and from Sta. 1414+50 to Sta. 1437+70, a distance of about 0.43 of a mile on the east end of the bridge. 0.63 of a mile of grading approaches to Gate Creek Bridge at Vida (about 27 miles east of Springfield). Width of roadway 28 feet, ditches not included.

Contract No. 1103, awarded June 27, 1929, to Earl McNutt, of Eugene, Oregon. Work commenced July 8, 1929; completed November 15, 1929. Final cost, $9,066.67. Resident Engineer, H. W. Libby.

Upon the completion of the Gate Creek Bridge which is located on new and improved alignment, the grading of roadway approaches was required to make a connection with the traveled highway and to permit the use of the structure. Accordingly, a project was undertaken which in addition to the work on this section, included work of a similar nature on the McKenzie Bridge section, this latter work being described in another article in this report.

Upon completion of the embankments, the section was surfaced with crushed gravel purchased from C. G. McKy and furnished from his plant at Doyle Hill. The price of this material, which included the six mile haul from the plant to the point of deposit was $1.75 per cubic yard. The spreading and processing of the materials were done by state forces.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 515.12
Reconstructing water pipe line		31.82
Gravel sub-grade surfacing		2,057.19
Hauling and constructing surfacing		546.97
Sprinkling surfacing		29.50
Maintaining detours		20.40
Contract items as follows:		
Clearing and grubbing, lump sum	$ 400.00	
Common excavation, 4,641.8 cu. yds. at 30c	1,392.54	
Intermediate excavation, 4,442.2 cu. yds. at 70c	3,109.54	
Solid rock excavation, 125.9 cu. yds. at 70c	88.13	
Overhaul, 14,892 yd. sta. at 3c	446.76	
12-inch concrete pipe, 69 lin. ft. at $1.00	69.00	
18-inch concrete pipe, 111 lin. ft. at $2.00	222.00	
18-inch concrete pipe (unused), 81 lin. ft. at $1.70	137.70	
Total amount paid to contractor		5,865.67
Total cost of Gate Creek bridge approach		$ 9,066.67

PARTICIPATION IN COST

State	$ 1,223.37
County	3,922.34
Government	3,920.96
Total	$ 9,066.67

McKenzie Bridge Approaches Grading

Federal Aid Project No. 117-E

On the McKenzie Highway from Sta. 30+21.6 to Sta. 62+00, a distance of about 0.60 mile on the west end of the bridge, and from Sta. 62+00 to Sta. 82+00, a distance of about 0.23 mile on the east end of the bridge; 0.83 mile of grading approaches to McKenzie Bridge at McKenzie Bridge Post Office (about 50 miles east of Springfield). Roadway 28 feet wide, not including ditches.

Contract No. 1103, awarded June 27, 1929, to Earl McNutt of Eugene, Oregon. Work commenced July 15, 1929; completed December 3, 1929. final cost $9,008.30. Resident Engineer, H. W. Libby.

The construction of the McKenzie Bridge and the grading of this section constitute a very material betterment in alignment at this point. Two right angle turns were eliminated and considerable reduction in distance was affected. Due to the comparatively small amount of work involved on both units, this project was undertaken in conjunction with the grading of the Gate Creek Bridge approaches, which work is described in a separate article in this report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 479.99
Contract items as follows:		
Clearing and grubbing, lump sum	$ 2,800.00	
Common excavation, 8,764.8 cu. yds. at 50c	4,382.40	
Overhaul, 15,613.7 yds. sta. at 3c	468.41	
12-inch concrete pipe, 198 lin. ft. at $1.25	247.50	
18-inch concrete pipe, 144 lin. ft. at $2.50	360.00	
30-inch concrete pipe, 45 lin. ft. at $6.00	270.00	
Total payment to contractor		8,528.31
Total cost of McKenzie River bridge approach		$ 9,008.30

PARTICIPATION IN COST

State	$ 3,555.22
Government	5,453.08
Total	$ 9,008.30

West Unit, Lowell-Goodman Creek Grading

On the Willamette Highway, from Sta. 0-04.1, which station is near the Lowell Bridge, east to Sta. 213+00; 3.92 miles of grading, 24 foot roadbed between ditches.

Contract No. 999, awarded September 27, 1927, to Baker and Scharschmidt, of Portland, Oregon. Work commenced October 17, 1927; completed October 5, 1929. Final cost $70,701.79. Resident Engineer, H. W. Libby.

This project was undertaken during the 1926-1927 biennium and a descriptive article will be found on pages 352-353 of the report covering that period.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 5,199.15
Contract items as follows:		
Clearing and grubbing, lump sum	$ 8,000.00	
Common excavation, 36,118.1 cu. yds. at 38c	13,724.88	
Intermediate excavation 35,826 cu. yds. at 48c	17,196.48	
Solid rock excavation, 18,529.4 cu. yds. at 78c	14,452.93	
Overhaul, 118.185.1 yd. sta. at 3c	3,545.55	
12-inch concrete pipe, 138 lin. ft. at $1.25	172.50	
18-inch concrete pipe, 939 lin. ft. at $2.50	2,347.50	
24-inch concrete pipe, 357 lin. ft. at $3.50	1,249.50	
30-inch concrete pipe, 282 lin. ft. at $5.00	1,410.00	
Lumber and timber, 27.143 M-FBM at $48.00	1,302.86	
Class "B" concrete, 9.94 cu. yds. at $25.00	248.50	
Concrete pipe unused, 15 lin. ft. at 69c	10.35	
Force account items as follows:		
Clearing outside of right-of-way	1,620.30	
Sloping restaked banks	221.29	
Total amount paid to contractor		65,502.64
Grand total cost of project		$ 70,701.79

PARTICIPATION IN COST

	State	*County*	*Total*
Expended 1927-28 biennium	$ 2,803.71	$ 47,869.99	$ 50,673.70
Expended 1929-30 biennium	2,395.44	17,632.65	20,028.09
Total	$ 5,199.15	$ 65,502.64	$ 70,701.79

[LANE]

East Unit, Lowell-Goodman Creek Grading

On the Willamette Highway, from Sta. 213+00, which station is approximately four miles east of the town of Lowell, east to Sta. 397+35, which station is at Goodman Creek; 3.49 miles of grading, class "A" 24-foot standard roadbed.

Contract No. 1,009, awarded October 25, 1927, to Von der Hellen & Pierson, of Medford, Oregon. Work commenced December 24, 1927. Completed October 20, 1928. Final cost, $145,444.03. Resident Engineer, H. W. Libby.

Further details will be found on page 353 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 5,528.28
Credit by forfeiture of Moon & Company bidder's bond Cr.		4,000.00
Contract items as follows:		
Clearing and grubbing, lump sum	$ 12,000.00	
Common excavation, 56,614.1 cu. yds. at 40c	22,645.64	
Intermediate excavation, 41,001.4 cu. yds. at 40c	16,400.56	
Solid rock excavation, 93,135.6 cu. yds. at 75c	69,851.70	
Overhaul, 196,921.7 yds. sta. at 3c	5,907.65	
Class "A" concrete, 118.3 cu. yds. at $24.00	2,839.20	
Class "B" concrete, 23.21 cu. yds. at $24.00	557.04	
Rubble masonry, 475.71 cu. yds. at $10.00	4,757.10	
Rock backfill, 2.7 cu. yds. at $2.00	5.40	
Metal reinforcement, 12,516.8 lbs. at 7c	876.18	
Lumber and timber, 62.032 M-FBM at $55.00	3,411.76	
6-inch porous drain tile, 80 lin. ft. at 40c	32.00	
12-inch concrete pipe, 66 lin. ft. at $1.50	99.00	
18-inch concrete pipe, 723 lin. ft. at $2.50	1,807.50	
24-inch concrete pipe, 216 lin. ft. at $3.50	756.00	
30-inch concrete pipe, 180 lin. ft. at $5.00	900.00	
Force account items as follows:	25.02	
Setting anchor bars for box culvert	838.03	
Clearing and grubbing off right-of-way	192.74	
Part of cost of new water pipe crossing highway	13,23	
Total amount paid to contractor		143,915.75
Grand total cost of project		$145,444.03

PARTICIPATION IN COST

	State	*County*	*Total*
Expended 1927-28 biennium	$ 4,453.92	$138,856.81	$143,310.73
Expended 1929-30 biennium	1,074.36	1,058.94	2,133.30
Total expenditures	$ 5,528.28	$139,915.75	$145,444.03

Black Canyon Grading

On the Willamette Highway, from Sta. 690+00, which station is across the river from Lawler, about 33 miles east of Eugene, east to Sta. 865+00, which station is about 6 miles west of Oakridge. 3.31 miles of grading, 26-foot roadbed between ditches.

Contract No. 1102, awarded June 27, 1929, to Slate Construction Company, of Albany, Oregon. Work commenced July 1, 1929. Estimated cost, $159,000 from state funds. Expenditures to date $94,083.81. Resident Engineer, H. W. Libby.

Considerable delay was encountered by the contractor on this project because of the dry summer of 1929, which, due to fire hazard, prohibited the necessary burning work in connection with clearing operations. The work was about 90 per cent completed at the close of the biennium, but due to the adverse winter weather which normally occurs in this locality it is anticipated that the project will not be completed before the late spring of 1931.

Goodman Creek Forest Road Grading

This section of the Willamette Highway begins at Goodman Creek and extends easterly 5.54 miles. The grading contract was begun in the summer of 1928, and was completed November 26, 1929.

The total cost of the project amounts to $110,450.63, consisting of $72,950.63 from government funds and $37,500 from county funds.

Further details will be found on page 351 of the 1927-28 report.

Florence-Rainrock Forest Road Grading

This project consists of the grading of the Southern Pacific railroad encroachment sections on the Siuslaw Highway between Florence and Rainrock.

Bids were opened January 3, 1930, and Morrison and Knudsen Co. of Boise, Idaho, received the contract and work officially started February 13, 1930. Very good progress has been made on this project and the two end sections are practically complete. The approval of the Southern Pacific Company as to slopes and character of construction has been secured. The center section involved a large slide with an overrun of estimated unclassified yardage of approximately 161,000 cubic yards. This was caused by the hill breaking back some 600 feet from the right-of-way causing the whole side hill to move. The removal of the material in the slide center is progressing satisfactorily.

The work at the slide is probably 85 per cent complete. The remainder of the work on the center section slide will probably continue all winter and will not be complete until dry weather next season. The entire project is estimated 87 per cent complete.

The estimated cost of the work is $742,000, the state's share being $300,000, the county's share $150,000 and the government's share $292,000. Expenditures to date amount to $463,814.82, consisting of $350,000 from state funds ($50,000 of which was advanced for the county) $80,000 from county funds and $33,814.82 from government funds.

Sutton Creek Bridge

Federal Aid Project No. 144-E

On the Roosevelt Coast Highway, 6 miles north from Florence; one 34-foot, one 42-foot and one 34-foot continuous concrete spans with 27-foot clear roadway and two 3½-foot sidewalks.

Contract No. 1192, awarded April 30, 1930, to Liesch & Tofte, of Marshfield, Oregon. Work commenced May 12, 1930. Estimated cost, $14,000, consisting of $1,903.79 from state funds, $3,300 from county funds and $8,796.21 from government funds. Expenditures to date amount to $9,142.88, comprising $6,954.34 from state funds and $2,188.54 from county funds. Resident Engineer, L. L. Jensen.

This structure is on the new section of the Roosevelt Coast Highway between Sutton Creek and Berry Creek. Sidewalks were incorporated in the design in anticipation of future tourist and camping needs.

Camas Swale Bridge

Federal Aid Project No. 161-A

On the Pacific Highway, near Creswell; one 37-foot, one 46-foot and one 37-foot continuous concrete span with 27-foot clear roadway.

Contract No. 1193, awarded April 30, 1930, to Hargreaves & Lindsay, of Eugene, Oregon. Work commenced June 1, 1930; completed August 31, 1930. Estimated cost $13,000, all from state funds. Expenditures to date have amounted to $10,531.43 of state funds. Resident Engineer, L. C. Smitton.

This bridge replaces a timber trestle which had deteriorated beyond the point of safety. Construction work on this project is complete but final settlement has not yet been made.

Indian Creek Bridge

Federal Aid Project No. 149-A

On the Siuslaw Highway, near Swisshome; two 45-foot and one 70-foot continuous concrete spans, with 24-foot clear roadway.

Contract No. 1106, awarded June 27, 1929, to Peart Bros., of Portland, Oregon. Work commenced July 10, 1929; completed December 5, 1929. Final cost, $112,955.59. Resident Engineer, L. C. Smitton.

This bridge replaces a wooden span at the same site.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,655.82
Contract items as follows:		
Excavation, 71.5 cu. yds. at $2.50	$ 178.75	
Excavation below elevation shown, 1.44 cu. yds. at $10.00	14.40	
Class "A" concrete, 182.6 cu. yds. at $21.00	3,834.60	
Class "D" concrete, 106.35 cu. yds. at $22.00	2,339.70	
Metal reinforcement, 69,301 lbs. at 5c	3,465.05	
Concrete handrail, 330 lin. ft. at $4.00	1,320.00	
Remove old bridge and maintain traffic—lump sum $300.00	300.00	
Total earned by ocntractor	$ 11,452.50	
Deduction for cement adjustment, 49.75 bbls. at $3.07	152.73	
Total amount paid contractor		11,299.77
Grand total cost of structure, 1929-30		$ 12,955.59

PARTICIPATION IN COST

	State	*County*	*Government*	*Total*
Expended to date	$ 10,130.65	$ 2,824.94	$........	$ 12,955.59
Estimated cost to complete	Cr. 7,658.28	....	7,658.28	....
Estimated total cost	$ 2,472.37	$ 2,824.94	$ 7,658.28	$ 12,955.59

Deadwood Creek Bridge

On the Siuslaw Highway, near Swisshome; two 100-foot steel truss spans on concrete abutments.

Contract No. 984, awarded June 23, 1927, to D. T. Eaton Construction Company, of Portland, Oregon. Work commenced July 11, 1927; completed May 21, 1928. Final cost, $33,073.20. Resident Engineer, R. G. Barnes.

This bridge was completed during the previous biennium and a descriptive article will be found on page 357 of the report for that period.

The only expenditure during the present biennium is an item of $164 for royalty on material used by the contractor in constructing approach fills.

The State has been reimbursed by the contractor to the amount of $80, leaving a net charge on the books of $84. The total cost of the structure amounted to $33,073.20 on September 30, 1930, of which the State expended $25,392.86 and the county $7,680.34.

Concrete Approach to Springfield Bridge

Federal Aid Project No. 117-B

On the McKenzie Highway, at Springfield; three 50-foot concrete spans added to west end of present Springfield structure.

Contract No. 1112, awarded August 6, 1929, to Hargreaves and Lindsay, of Eugene, Oregon. Work commenced August 13, 1929; completed December 6, 1929. Final cost, $14,838.93. Resident Engineer, Marshall Dresser.

An agreement was effected with adjacent property owners whereby, with the addition of three 50-foot spans to the west approach to the Springfield Bridge, objection to the approach fills was withdrawn. These additional spans were of the same design and finish as the main structure.

Under agreement with Lane County the state is to pay the entire cost of the first 100 feet of structure adjoining the main bridge, and the county is to pay the difference between the cost of the next 50-foot span and the estimated cost of the embankment, paving, sidewalks and guard fence which the span replaces.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 2,009.71
Contract items as follows:		
100-ft. extension:		
Excavation, 155.3 cu. yds. at 75c	$ 116.48	
Excavation below elevation, .14 cu. yds. at $1.00	.14	
Class "A" concrete, 200.11 cu. yds. at $16.00	3,201.76	
Class "D" concrete, 113.14 cu. yds. at $14.00	1,583.96	
Metal reinforcement, 62,337 lbs. at 5c	3,116.85	
Concrete handrail, 213.42 lin. ft. at $3.00	640.26	
Cement adjustment, 9.67 bbls. at $3.09	29.88	
Force account items as follows:		
Anchor approach sidewalk to bridge	109.32	
Paint unfinished portions with Bondex	92.93	
	$ 8,891.58	
50-ft. extension:		
Excavation, 65.2 cu. yds. at 75c	48.90	
Class "A" concrete, 84.16 cu. yds. at $16.00	1,346.56	
Class "D" concrete, 56.45 cu. yds. at $14.00	790.30	
Metal reinforcement, 27,810 lbs. at 5c	1,390.50	
Concrete handrail, 100 lin. ft. at $3.00	300.00	
Cement adjustment, 4.83 bbls. at $3.09	14.92	
Force account, paint unfinished portions with Bondex	46.46	
	$ 3,937.64	
Total amount paid contractor		12,829.22
Grand total cost of structure, 1929-30		$ 14,838.93

PARTICIPATION IN COST

	State	*County*	*Government*	*Total*
Expenditures to date	$ 12,004.99	$ 2,833.94	$..............	$ 14,838.93
Estimated cost to complete	Cr. 1,014.79	....	1,014.79	....
Estimated total cost	$ 10,990.20	$ 2,833.94	$ 1,014.79	$ 14,838.93

[LANE]

Bridge over Willamette River at Springfield

Federal Aid Project No. 117-B

On the McKenzie Highway, at Springfield; three 50-foot concrete approach spans, one 550-foot continuous steel truss span, three 50-foot concrete approach spans, with 27-foot clear roadway and two 5-foot sidewalks.

Contract No. 1033, awarded March 27, 1928, to Lindstrom & Feigenson, of Portland, Oregon. Work commenced April 18, 1928; completed October 31, 1928. Final cost, $133,079.04. Resident Engineer, Marshall Dresser.

This bridge was completed but final settlement was not effected during the preceding biennium. Construction details are described on page 355 of the 1927-28 Report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 6,181.56
Labor and materials furnished by state:		
Transcript of Public Service Commission proceedings		155.10
Electrical conduits and hangers		231.03
Making test soundings		152.27
Credit by sale of old lumber Cr.		28.00
Contract items as follows:		
Excavation, 572.32 cu. yds. at $3.00	$ 1,716.96	
Excavation below elevation, 35.74 cu. yds. at $5.00	178.70	
Class "A" concrete, 520.96 cu. yds. at $21.50	11,200.64	
Class "B" concrete, 392.21 cu. yds. at $18.00	7,059.78	
Class "D" concrete, 816.77 cu. yds. at $20.00	16,335.40	
Metal reinforcement, 317.71 lbs. at $3.75	11,914.12	
Structural steel, 909,598 lbs. at 6½c	59,123 87	
Concrete handrail, 1,714.84 lin. ft. at $5.00	8,574.20	
Additional items under special agreements:		
Excavation, 52.27 cu. yds. at $2.70	141.13	
Excavation below elevation, 3.13 cu. yds. at $4.50	14.09	
Class "A" concrete, 152.43 cu. yds. at $19.35	2,949.52	
Class "D" concrete, 101.29 cu. yds. at $18.00	1,823.22	
Metal reinforcement, 46,039 lbs. at 3.375c	1,553.82	
Concrete handrail, 180 lin. ft. at $4.50	810.00	
Weephole pipes, 27 each at $2.50	67.50	
Bondex finish, 266.25 sq. yds. at $2.25	599.06	
Force account items as follows:		
Construct temporary office for engineer	106.16	
Place conduits for electric lights	147.27	
Cut rivets and rerivet diaphram in place	110.23	
Reframe sidewalk brackets	70.89	
Drill extra holes not shown on bid plans	149.23	
Rivet floor beams	130.38	
Additional cost due to change in structural steel quantities	2,192.13	
Total amount earned by contractor	$126,968.30	
Deduction for cement adjustment Cr.	581.22	
Total amount paid to contractor		126,387.08
Grand total cost of project		$133,079.04

PARTICIPATION IN COST

	State	*County*	*Government*	*Total*
Expended 1927-28 biennium Cr.	$ 3,277.22	$ 42,716.62	$ 65,484.40	$104,923.80
Expended 1929-30 biennium Cr.	5,779.65	22,283.38	11,651.51	28,155.24
Total expenditures Cr.	$ 9,056.87	$ 65,000.00	$ 77,135.91	$133,079.04
Estimated cost to complete Cr.	3,646.67		3,646.67	
Estimated total cost Cr.	$12,703.54	$ 65,000.00	$ 80,782 58	$133,079.04

Eugene Power Canal Bridge

Federal Aid Project No. 117-G

On the McKenzie Highway, at the town of Walterville; one 46-foot, one 58-foot and one 46-foot continuous concrete spans with 24-foot clear roadway and two 3½-foot sidewalks.

Contract No. 1200, awarded June 26,1930, to H. E. Wilder & Co., of Eugene, Oregon. Work commenced July 7, 1930; completed September 30, 1930. Estimated cost, $15,000 of which the state, county and city of Eugene will each pay one-third of the construction cost. The Federal Government's share is estimated at $9,210.35. Expenditures to date have amounted to $11,080.70, the state having paid $7,508.50 and the county $3,572.20. Resident Engineer, R. A. Wanless.

Construction work is complete but final settlement has not been made. This structure is part of the new section of the McKenzie Highway. It replaces an old timber trestle and is on new and improved alignment. Through arrangement with the Eugene Water Board the water was turned out of the canal during construction of the footings. Due to the fact that the structure crosses the canal of the Eugene Water Board it was necessary to design the piers to offer the least possible resistance to the flow.

Gate Creek Bridge

Federal Aid Project No. 117-D

On the McKenzie Highway, near the town of Vida; two 40-foot, one 60-foot and one 40-foot continuous concrete spans, with 24-foot clear roadway and two 4-foot sidewalks.

Contract No. 1067, awarded January 29, 1929, to Rigdon Bros., of Woodburn, Oregon. Work commenced February 20, 1929; completed January 20, 1930. Final cost, $18,885.91. Resident Engineer, Marshall Dresser.

This bridge replaces a wooden span near the same site and is on revised alignment which eliminates sharp curves at each end of the old bridge.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 2,415.63
Name plates		26.30
Digging test pits		274.70
Contract items as follows:		
Excavation, 192.58 cu. yds. at $6.00	$ 1,155.48	
Excavation below elevation, 6.4 cu. yds. at $7.00	44.80	
Class "A" concrete, 241.4 cu. yds. at $22.00	5,310.80	
Class "D" concrete, 157.3 cu. yds. at $23.50	3,696.55	
Metal reinforcement, 88,769 lbs. at .045c	3,994.61	
Concrete handrail, 369.32 lin. ft. at $5.00	1,846.60	
Removal of old bridge and maintenance of traffic	300.00	
Total amount earned by contractor	$ 16,348.84	
Deduction for cement adjustment, 67.25 bbls. at $2.67	179.56	
Total amount paid contractor		16,169.28
Grand total cost of structure 1929-30 biennium		$ 18,885.91

PARTICIPATION IN COST

State	$ 3,926.45
County	4,042.32
Government	10,917.14
Total	$ 18,885.91

[LANE]

Blue River Bridge

Federal Aid Project No. 117-C

On the McKenzie Highway, at Blue River; two 20-foot and three 60-foot continuous concrete spans, with 20-foot clear roadway and two 3-foot, 4-inch sidewalks.

Contract No. 1005, awarded September 27, 1927 to E. R. Metzger, of Roseburg, Oregon. Work commenced October 27, 1927; completed July 15, 1928. Final cost, $23,444.91. Resident Engineer, Marshall Dresser.

This bridge replaces a wooden span near the same site. The new structure is on revised alignment eliminating sharp curves at each end of the old bridge. A plaster finish was used on all exposed surfaces of the concrete which harmonizes with the scenic setting of the bridge. This job was completed but final settlement was not effected during the preceding biennium.

DETAILED STATEMENT OF EXPENDITURES

Enginering		$ 2,640.26
Red reflectors sold to contractor		5.40
Labor and materials furnished by state:		
Royalties on gravel		15.70
Bronze name plates		31.88
Constructing approach fills		2,681.06
Constructing surfacing on approach fill		363.75
Placing riprap		135.60
Contract items as follows:		
Excavation, 69 cu. yds. at $1.50	$ 103.50	
Excavation below elevation, 156 cu. yds. at $2.00	312.00	
Class "A" concrete, 340.97 cu. yds. at $23.00	7,842.31	
Class "D" concrete, 170.12 cu. yds. at $22.00	3,742.64	
Metal reinforcement, 89,678 lbs. at 4½c	4,035.51	
Reinforced concrete handrail, 449.35 lin. ft. at $4.50	2,021.99	
Force account item as follows:		
Widening east approach and painting inside beams with Bondex concrete paint	68.61	
Total amount earned by contractor	$ 18,126.56	
Deduction for cement adjustment	549.90	
Deduction for red reflector	5.40	
Total amount paid to contractor		17,571.26
Grand total cost of structure		$ 23,444.91

PARTICIPATION IN COST

	State	*County*	*Government*	*Total*
Expended 1927-28 biennium	$ 6,669.71	$ 2,817.38	$ 7,902.00	$ 17,389.09
Expended 1929-30 biennium	101.31	2,375.81	3,578.70	6,055.82
Total of expenditures	$ 6,771.02	$ 5,193.19	$ 11,480.70	$ 23,444.91

Leaburg Power Canal Bridge

On the McKenzie Highway, approximately 3 miles east of Leaburg; three 60-foot continuous concrete spans with 24-foot clear roadway and two 3½-foot sidewalks

This structure was designed for Stephens & Koon of Portland, Engineers for the Eugene Water Board. It carries the Highway across the main canal of the Leaburg Power development. The bridge was constructed in the summer of 1929, at an approximate cost of $20,500, being paid entirely by the Eugene Water Board.

McKenzie River Bridge

Federal Aid Project No. 117-E

On the McKenzie Highway, at McKenzie Bridge; two 50-foot concrete spans, one 100-foot steel pony span encased in concrete and gunite, with 24-foot clear roadway and two 4-foot sidewalks.

Contract No. 1068, awarded January 29, 1929, to Northwest Contract Co., of Portland, Oregon. Work commenced March 18, 1929; completed November 7, 1929. Final cost, $44,325.65. Resident Engineer, Marshall Dresser.

This bridge replaces the covered wooden bridge which has been a land mark in this vicinity for many years. On account of the wonderful scenery surrounding the site particular care was taken to make the bridge worthy of its setting. The steel truss of the stream span is encased in concrete and has the appearance of a concrete arch.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 3,271.33
Name Plates		26.30
Digging Test Pits		199.89
Contract Items as Follows:		
Excavation, 456 cu. yds. at $9.00	$ 4,104.00	
Class "A" concrete, 424.1 cu. yds. at $24.00	10,178.40	
Class "D" concrete, 219.1 cu. yds. at $24.00	5,258.40	
Metal reinforcement, 94,515 lbs. at 5c	4,725.75	
Structural steel, 159,591 lbs. at 7c	11,171.37	
Concrete handrail, 474.08 lin. ft. at $4.50	2,133.36	
¾-inch Gunite encasement, 1,008 sq. ft. at 25c	252.00	
1-inch Gunite encasement, 3,027 sq. ft. at 30c	908.10	
Encasement concrete, 51.6 cu. yds. at $24.00	1,238.40	
Force account items as follows:		
Encase walk brackets in concrete	525.88	
Plaster inside lower chords and end beams	384.98	
Clear, grub and grade under panel No. 3 to increase waterway	87.10	
Total amount earned by contractor	$ 40,967.74	
Deduction for cement adjustment, 38.25 bbls. at $3.65	139.61	
Total amount paid contractor		40,828.13
Grand total cost of structure, 1929-30		$ 44,325.65

PARTICIPATION IN COST

State	$ 7,929.51
County	10,207.03
Government	26,189.11
Total	$ 44,325.65

Siltcoos River Bridge

Federal Aid Project No. 144-D

On the Roosevelt Coast Highway, six miles south of Glenada; One 52-foot, one 68-foot and one 52-foot continuous concrete spans, with 27-foot clear roadway and two 3½-foot sidewalks.

Contract No. 1191, awarded April 30, 1930, to Liesch & Tofte, of Marshfield, Oregon. Work commenced May 12, 1930. Estimated cost, $28,000, consisting of $4,438.09 from state funds, $6,500 from county funds and $17,061.91 from government funds. Expenditures to date have amounted to $8,418.12, of which $6,378.41 have been from state funds and $2,039.71 from county funds. Resident Engineer, L. L. Jensen.

This structure is on the new section of the Roosevelt Coast Highway between Florence and the Douglas County line. It will, when completed, have a 27-foot roadway and two 3½-foot sidewalks. It is about ¼ mile west of the town of Westlake.

Maintenance

State highways in Lane County comprise a total of 192.69 miles of which there are 31.24 miles of bituminous pavement, 15.93 miles of concrete pavement, 4.97 miles of bituminous macadam, 43.89 miles of oiled macadam, 59.58 miles of untreated macadam and 37.15 miles of earth roads.

During the biennium all routine maintenance of pavements, macadams, roadbeds, drainage, shoulders, et cetera, and all betterment work in Lane County were handled by Raymond Walsh, Resident Maintenance Engineer at Eugene, under the direction of J. S. Sawyer and E. A. Collier, successive Division Engineers. The Siuslaw Highway from Greenleaf Creek to Low Pass Summit was given light oil treatment to hold the new resurface until bituminous macadam can be laid in 1931. Most of the section from Low Pass to Cheshire, and the Goshen-Lowell section of the Willamette Highway, were re-oiled. During the biennium a total of 34.60 miles of untreated macadam were oiled and 25.82 miles of oiled macadam were reoiled.

The Pacific Highway pavement from Eugene to Santa Clara was widened with oiled macadam shoulders, and from Eugene to Junction City was given a non-skid treatment. Many dangerous trees on the upper McKenzie were cut, and eleven narrow points on the Dead Horse grade were widened.

During the biennium, the total expenditures in the county for general maintenance were $220,393.93 and for minor betterment work, $7,678.42.

Greenleaf Creek-Low Pass Summit Resurfacing

On the Siuslaw Highway, from Mile Point 35.73, at Greenleaf Creek, east to Low Pass Summit, Mile Point 48.03, about 19 miles west of Junction City; 12.30 miles of resurfacing with broken stone, 16 feet in width and 5 inches in depth, and furnishing approximately 6,300 cubic yards of broken stone for maintenance and betterment operations.

Contract No. 1084 was awarded March 29, 1929, to the Holdener Construction Company of Salem, Oregon. Work commenced April 16, 1929; completed June 14, 1930. Estimated cost $60,000 to be paid from state funds. Resident Engineer, Raymond Walsh.

The quarry at Cape Jenny, from which rock was produced for this project, proved very unsatisfactory, containing a large amount of red clay and rotten rock. A drag line outfit was originally installed and operated in the quarry, but progress was very poor, only one-half of the work being accomplished by November 30, 1929, the specified completion date. In January of the following year, the drag line plan of operation was discontinued and a track and car set-up substituted, the expense of this change being paid by the state. The resurfacing work was completed by May, 1930, but good quality rock was becoming very scarce in the quarry which resulted in the practical impossibility of procuring satisfactory maintenance materials from that source. Accordingly, the contract was terminated, by mutual agreement, after 631 cubic yards of maintenance rock had been produced.

Financial difficulties were encountered by the contractor, on this project, and in the fall of 1929 it became necessary for the bonding company to take over the work.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,830.86
Labor and materials furnished by state:		
Equipment furnished		247.07
Cleaning ditches and culverts		55.55
Maintaining completed portions of project		247.75
Constructing and widening roadbed		578.85
Sprinkling surfacing		2,917.84
Hauling and spreading filler		206.92
Preparation of stock pile sites		373.86
Signs for traffic control		86.86
Transporting rails and cars to and from quarry		165.96
Building burms on fill sections		826.86
Equipment rental, and labor deducted from contractor's estimate		108.00
Contract items as follows:		
Base course resurfacing, 14,402.5 cu. yds. at $1.65	$ 23,764.13	
Top course resurfacing, 3,820 cu. yds. at $1.30	4,966 00	
Grade "A" maintenance material, 222 cu. yds. at $1.35	299.70	
Grade "B" maintenance material, 409 cu. yds. at $1.35	552.15	
Earth filler, 3,774 cu. yds. at 40c	1,509.60	
Waste materials, 8,013.5 cu. yds. at 25c	2,003.38	
Hauling broken stone, 72,492.75 yd. mi. at 18c	13,048.70	
Filler haul, 16,132.75 yd. mi. at 19½c	3,145.89	
Hauling waste material, 5,828 yd. mi. at 18c	1,049.04	
Force account item:		
Changing quarry operations from drag line to track and car set up	1,999.87	
Total amount earned by contractor	$ 52,338.46	
Deductions:		
State equipment and labor	108.00	
Final estimate in process of payment	1,943.78	
Total amount paid to contractor		50,286.68
Grand total expended on project, all state funds, 1929-30		$ 57,933.06

Triangle Lake-Low Pass Summit Maintenance Materials

On the Siuslaw Highway, from Mile Point 38.0, which Mile Point is about two miles west of Triangle Lake, east to Mile Point 50.0, which point is about two miles east of the Low Pass Summit; furnishing 13,900 cubic yards of broken stone in three sizes for maintenance and betterment operations, sizes are 1½–1 inch, 1–½ inch and ½–¼ inch.

Contract No. 1202, awarded June 26, 1930, to L. D. Packard of Blachly, Oregon. Work commenced July 7, 1930. Estimated cost $38,000 from state funds. Expenditures to date, $7,637.62. Resident Engineer Raymond Walsh.

As described in another article in this report, this section was resurfaced under a previous contract, which likewise contemplated the production and stock-piling of broken stone for future oiling operations. However, due to failure of the quarry at Cape Jenny, from which the materials were being produced, this prior contract was prematurely terminated upon completion of the resurfacing and production of a very small quantity of the contemplated maintenance materials.

Accordingly, to complete the furnishing of the required stock-piled materials, this project was undertaken and a contract awarded in June, 1930. The crushed rock being produced under this contract, is from the Horton quarry, and is of a very good quality. Progress has been slow and at the close of the biennium there have only been about 5,000 cubic yards of materials produced and stock-piled.

Nimrod-Belknap Springs, Resurfacing

On the McKenzie Highway, from Mile Point 35.33, at Nimrod, east to Mile Point 56.33, which point is at the junction of the highway with the road leading to Belknap Springs; 21.0 miles of resurfacing and furnishing approximately 10,500 cubic yards of broken stone and gravel for use in connection with maintenance and betterment work. Resurfacing will be 16 feet wide and 5 inches deep except on line changes, where it will be 8 inches deep.

Contract No. 1171, awarded March 27, 1930 to J. W. and J. R. Hillstrom, of Marshfield, Oregon. Work commenced April 15, 1930. Estimated cost, $83,000 from state funds. Expenditures to date, $16,796.60. Resident Engineer Walter M. Ransom.

This section of highway has been constructed for many years and due to the heavy traffic to which it has been subjected, it was necessary to replace the resurfacing materials which had become very thin and worn. Likewise from an economic viewpoint as well as a convenience to the traveling public, the large volume of traffic carried by this highway has made the need of an oiled surface desirable and in addition to the resurfacing work being performed under the project, there are being produced sufficient broken stone materials which are being stock-piled at convenient points along the section, for contemplated oiling work.

The first six-mile section of the project, from Nimrod to Blue River was completed during the past season, the rock for this work being produced from the Finn Rock quarry. This section was treated with on oil surface, the oiling work being performed under the Eugene Oiling project. The contractor has now established his plant on Horse Creek from which he is producing crushed gravel and placing it on the east end of the section.

Lincoln County Line-China Creek Survey

This last section of the Roosevelt Coast Highway in Lane County to be placed under contract for grading was restaked and relocated in 1929 and 1930. Several improvements in line and grade were secured and additional section ties made, and plans completed to call for bids in October, 1930. Resident Engineer Carl Peterson did some retracing in 1929 on the north end, and B. A. Martin was locating engineer in 1930. There will be five concrete bridges and three large concrete box culverts on this section, in place of the wooden structures originally planned.

China Creek-Sutton Lake Survey

The original location for this section was made in 1922 and to bring this to a higher standard for alignment and width, a relocation was run in 1930. A twenty-four foot roadbed between ditches was selected, instead of 16 feet, as on the first survey. To avoid the long development up Cape Creek at Heceta Head, all of which was heavy work and out of sight of the ocean, a lower line over Sea Lion point was run and a tunnel 680 feet long through the Devil's Elbow, projected; and a high bridge over Cape Creek planned. This plan saves 1.43 miles of distance, reduces the total central angle by 3560 degrees, presents wonderful marine scenery, and gives access to the interesting Sea Lion caves and light house, and will not increase the yardage over that required for the 24 foot width of roadbed on the old location more than 15 per cent.

The work on this survey was under the supervision of Resident Engineer, B. A. Martin. The length of line located was 8.84 miles and the survey was completed in July, 1930.

Florence-Douglas County Line Survey

The relocation survey described in the last report was finished in June, 1929, under the supervision of Glenn E. Roberts, Resident Engineer. On the south side of the Siuslaw river, a ferry connection was located, just east of the bridge site. The net distance covered by the work in 1929 was 4.59 miles.

Further details may be found on page 361 of the 1927-28 report.

Hendricks Bridge-Gate Creek Surveys

In preparation for a grading contract, a 9.27 mile relocation survey was made from Hendricks Bridge to Doyle Hill. Eight hundred feet of distance and two curves were eliminated between Hendricks Bridge and Walterville, all curves at O'Brien point cut out, and several changes made to fit the Eugene Power Plant Construction at Leaburg and along the canal.

From Doyle Hill to Craft Hill, a relocation was made necessary to permit construction of the Power Canal, as the slopes covered the location in two places and the canal crossed it at Ward Hill where the City built a concrete bridge for the highway on the new location. The grade at the Fish Hatchery was raised above reservoir level by the City.

At Gate Creek a new bridge was required, so a location was staked and plans prepared to grade a section ⅔ mile long to connect with the old road.

All these locations, totaling 12.36 miles, were made by H. W. Libby, Resident Engineer, Eugene, Oregon.

Further details may be found on page 361 of the 1927-1928 report.

[LANE]

McKenzie Bridge Section Survey

When the time came to replace the McKenzie Bridge, a new line crossing the river on a long tangent was located. Considerable saving in distance and a big improvement in alignment were secured.

The survey was made under the direction of H. W. Libby, Resident Engineer, during January, 1929, the length of the new alignment being 0.8 of a mile.

Springfield-Cogswell Hill Survey

This location, described in the last report, was completed in January, 1929, under the direction of Hollis W. Libby, Resident Engineer. The new line provides a saving of 1,775 feet of distance as compared with the old location through Thurston, and eliminates 17 curves and 574 degrees of central angle.

Further details may be found on page 361 of the 1927-28 report.

Willamette Highway Forest Road Survey

During the spring of 1930, a retracement survey was made on the Willamette Highway from Westfir to above Oakridge, running 14 miles of alternate line and 8.8 miles of located line.

The original Lowell-Crescent Forest Road survey, descriptions of which will be found on page 361 of the 1927-28 report and on page 356 of the 1923-24 report, was finaled on the Bureau's records in January, 1929, showing a total length, of 89.7 miles of surveyed line and a total expenditure of $27,000, consisting of $13,500 from state funds and $13,500 from government funds.

Expenditures amounting to $8,611.72 from government funds are reported for surveys on this section subsequent to the closing of the original survey project.

LINCOLN COUNTY

The state highway program in Lincoln County has made rapid progress during the past two years and original construction should all be finished during the summer of 1931 except for the crossings of Yaquina and Alsea Bays, where ferries will be maintained until traffic warrants bridges. A ferry slip and approach were built on each bay during 1930. The highway between the two bays was graded and is being surfaced by the Bureau of Public Roads as a Forest Project. The grading of a connection between the Alsea and Roosevelt Coast Highways in Waldport was also constructed as a Forest Project. The grading from Waldport south to the Lane county line was finished and macadam surfacing is well under way. A section of the Newport Highway from Eddyville to Pioneer Mountain is being widened and resurfaced in preparation for a bituminous macadam. Several other sections of the Corvallis-Newport and Alsea Highways will require similar treatment.

On the Roosevelt Highway a major betterment project was begun in the fall of 1929, which provided for the widening and resurfacing of the Neskowin-Otis section lying partly in Tillamook and partly in Lincoln counties. This work will be finished before the end of the current year, and it is expected that a similar project will be started in 1931 to cover the remaining section of the Roosevelt Coast Highway from Otis to the Siletz river.

Construction work on the State Highway System in Lincoln county during the past biennium has been carried on in that section of the county north of Siletz river by W. D. Clarke, Division Engineer, and for the remainder of the county under the direction of J. S. Sawyer and E. A. Collier, successive Division Engineers, with headquarters at Salem.

Otter Rock North Bituminous Macadam

On the Roosevelt Coast Highway, from Mile Point 146.37 at Otter Rock to Mile Point 138.02; 8.35 miles of bituminous macadam 1½ inches thick and 18 feet wide. Work done during June and July, 1929, by state oiling crew under Foreman Paul W. Kean.

Final cost excluding cost of stone, $19,306.08. Total cost with stone, $28,092.12. Resident Engineer, T. A. Rice.

Unit costs in connection with this work are as follows:

Cost per mile without stone	$2,312.00
Cost per square yard without stone	0.22
Cost per mile including cost of stone	3,364.00
Cost per square yard including cost of stone	0.32

Eddyville-Benton County Line Bituminous Macadam

On the Corvallis-Newport Highway, from Mile Point 34.7 at the junction of the road to Harlan, to Mile Point 31.4, which is about 0.5 mile east of Little Elk Creek; 3.3 miles of bituminous macadam wearing surface, 1½ inches thick and 18 feet wide. Work performed by state oiling crew under Foreman E. M. Nash during August, 1930.

Estimated cost, $16,000 from state funds. Total expended to date, $14,872.72. Resident Engineer, I. A. DeFrance.

Neskowin-Otis Regrading and Resurfacing

Federal Aid Project No. 153-A

On the Roosevelt Coast Highway, from Sta. 14+35.5, which station is near the post office at Neskowin, south to Sta. 597+12, which station is at the north end of the bridge over Salmon River at Otis; 10.94 miles of regrading and resurfacing, and furnishing approximately 13,300 cubic yards of broken stone in stock piles for use by the state in connection with maintenance and betterment operations. Width of resurfacing 18 feet, depth 9 to 12 inches.

Contract No. 1127, awarded September 26, 1929, to Milne & Dussault, of Portland, Oregon. Work commenced October 4, 1929. Estimated cost, $150,000, consisting of $79,445.50 from state funds and $70,554.50 from government funds. Expenditures to date, $85,313.29 from state funds and $28,269.25 from government funds. Resident Engineer, B. O. Johnson.

In preparation for continuing the construction of bituminous macadam surfacing on the Roosevelt Coast Highway south from Neskowin, the resurfacing of the Neskowin-Otis section was undertaken in 1929. This project was put on as a Federal Aid project and in order to meet the requirements of the federal bureau in the matter of width of surfacing to be constructed, it was found necessary to widen the roadbed. In connection with this work a number of minor line changes have also been made. Contract for the combined regrading and resurfacing was let in September, 1929 with the requirement that those line changes involving material fills should be completed in 1929. The grading and surfacing work is just being completed at the time this report is written and it is expected that the production of crushed rock material for the future bituminous macadam to be constructed, will be finished by the end of the year. Widening of the roadbed has been done on the basis of a 28-foot roadbed exclusive of side ditches and the resurfacing to a width of 18 feet; depth of surfacing has been varied from 9 inches where laid over the old macadam to 12 inches laid upon new grade.

Siletz Bay-Otter Rock Surfacing

Federal Aid Project No. 110-C

On the Roosevelt Coast Highway, from Sta. 601+00, which station is approximately 300 feet north of the north end of the bridge over the Siletz river about two miles south of the town of Taft, south to Sta. 76+00, which station is at the junction with the road leading to Otter Rock post office; 12.75 miles of surfacing with broken stone.

Contract No. 957, awarded March 4, 1927, to Greenwood and Dann, of Portland, Oregon. Work commenced April 23, 1927. Completed August 23, 1928. Final cost, $132,889.12. Resident Engineers, W .W. Stiffler until March, 1927, then T. A. Rice until completed.

This project was opened the past biennium only to record the receipt of $39,992.70 from the government. The total cost of the project now amounts to $132,889.12, of which $92,896.42 was expended from state funds and $39,992.70 from government funds.

Further details will be found on page 364 of the 1927-28 report.

South Beach-Alsea Bay Forest Road Surfacing

Due to the necessity for opening the new grade to travel between Newport and Waldport as early as possible, bids were received by the Bureau of Public Roads June 16, 1930, for the construction of 13.9 miles of crushed rock surfacing between South Beach and Alsea Bay. The contract was awarded to Hefty and Johnson, who began operation June 24. A thin course of rock has been placed from the quarry at Seal Rock north to South Beach and from Seal Rock south about half way to Alsea Bay. With favorable weather, it is anticipated that base rock will be over the entire project before the end of October.

Expenditures to date have amounted to $46,460.18, consisting of $20,000 from state funds and $26,460.18 from county funds.

Waldport and Waldport-Lane County Line Surfacing

Federal Aid Project No. 144-A

On the Roosevelt Coast Highway, from the intersection of Arrow and Hemlock Streets in Waldport, south to the Lane-Lincoln County Line. On the Alsea Highway from the intersection of Arrow and Hemlock Streets in Waldport, east to about one-half mile west of McKinney Slough; and on Broadway Street from its intersection with the Alsea Highway north to the waterfront; 13.27 miles of broken stone surfacing, 20 feet wide and 9 inches in depth, consisting of 11.67 miles on the Waldport-Lane County Line Section of the Roosevelt Coast Highway, 1.20 miles on the Waldport Section of the Alsea Highway and 0.40 mile on Broadway Street in the town of Waldport.

Contract No. 1197 was awarded May 22, 1930, to the Edlefsen-Weygandt Company of Portland, Oregon. Work commenced June 1, 1930. Estimated cost, $184,000 consisting of $131,571.51 from state funds and $52,428.49 from government funds. Expenditures to date have been $10,507.83. Resident Engineer, Carl A. Peterson.

The contractor has opened two quarries and set up two plants and is making very good progress. One quarry is on Eckman Creek 1½ miles south of the Alsea Highway, and the other is on the Yachats River, 0.4 mile east of the Roosevelt Highway. At the latter quarry a 24 x 36-inch jaw crusher is being used for a primary breaker. The good rock in this quarry is mixed with strata of inferior material and difficulty is expected in producing first-class rock for oil macadam. The contractor has placed the sub-base course over the entire job and will begin constructing the base course during October, 1930.

Pioneer Mountain-Eddyville Resurfacing

Federal Aid Project No. 150-A

On the Corvallis-Newport Highway, from Sta. 2257+23, which station is at the east foot of Pioneer Mountain grade about seven miles east of Toledo, east to Sta. 1715+00, which station is near the east end of the Yaquina River bridge at Eddyville; 10.10 miles of broken stone surfacing 7 inches in depth and 20 feet wide, and furnishing crushed rock in stock piles.

Contract No. 1209, awarded July 18, 1930 to C. L. Camp, of Medford, Oregon. Work commenced August 16, 1930. Estimated cost, $150,000, consisting of $75,000 from state funds and $75,000 from government funds. Expenditures to date have been $323.03 from state funds. Resident Engineer, Thomas A. Rice.

The surfacing on this section had been under severe traffic for several years, and a complete resurfacing of the section was necessary. Accordingly, a contract for this work was awarded and work was begun in August, 1930. In addition to the resurfacing work the contract calls for the production and stock piling, at convenient points along the section, of 11,650 cubic yards of crushed rock, these materials being for future use in constructing a bituminous macadam wearing surface and, likewise, for general maintenance work.

Suitable rock for surfacing has been difficult to secure adjacent to this section. The Steinmetz and Morrison quarries are the best sources available but rock of a desirable quality in each of these is covered with a heavy overburden of sandstone which must be removed before the quarry can be satisfactorily worked. The contractor has begun production from the Morrison quarry and after the usable rock from this source is exhausted, plans to produce the balance of required materials from the Steinmetz quarry. Production has been difficult which has resulted in progress being correspondingly slow. It is anticipated that the project will not be completed before July, 1931.

Seal Rocks-Alsea Bay Forest Road Grading

The remaining 5.6 mile unit of the Roosevelt Coast Highway between Seal Rocks and Alsea Bay was awarded by the Bureau of Public Roads July 5, 1930, to Earl L. McNutt, Eugene, Oregon. The work was completed September 2, 1930.

Expenditures to date have amounted to $102,379.47, consisting of $58,023.95 from state funds and $44,355.52 from government funds.

South Beach-Beaver Creek Forest Road Grading

This project was begun during the previous biennium and a descriptive article will be found on page 368 of the 1927-28 report. The grading was completed July 31, 1929, and the Beaver Creek Bridge was completed July 15, 1929.

The total cost of the project has amounted to $147,753.99, all expended from government funds.

Yaquina Bay-South Beach Ferry Slip and Grading

On the Roosevelt Coast Highway, from Sta. 608+50, which station is on the north end of a sand spit on the south side of Yaquina Bay, south to Sta. 661+00, which station is at the north end of the recently graded South Beach-Seal Rock forest road project; 1.0 mile of grading, 30-foot roadbed with 20-foot earth cushion, and the construction of a timber piling ferry slip and trestle approach.

Contract No. 1144, awarded January 16, 1930, to H. P. Nass of Seattle, Washington. Work commenced February 1, 1930; completed June 10, 1930. Final cost, $19,646.90. Resident Engineer, Thomas A. Rice.

The completion of this ferry slip and roadway connection with the recently completed forest road project has reduced the length of the ferry crossing to about one-third of the old ferry distance, the present length now being 3,000 feet.

The embankment was constructed 30 feet wide and an earth cushion was constructed on it 20 feet in width. A portion of the embankment is located on a sand spit which has an elevation of about 12 feet and considerable brush and rock has been placed upon the fill slopes of this section, for protection from the heavy wind and rain storms which often occur. More of this type of protection may be required in addition to the planting of Holland grass and maritime pines which it is planned to plant during the winter of 1930-31.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,056.08
Labor and materials furnished by state:		
Credit for culvert pipe purchased on contract and transferred to adjacent project Cr.		313.50
Signs for traffic control		15.85
Constructing shear boom		78.63
Driving piling for ferry slip		227.43
Removing sand drift		12.50
Building brush fence along sand fill		483.70
Hardware for ferry slip		8.25
Contract items as follows:		
Clearing and grubbing, all	$ 1,000.00	
Embankment in place, 22,679.8 cu. yds. at 27c	6,123.55	
Riprap, 247 cu. yds. at $3.50	864.50	
Lumber and timber, 9.966 M-FBM at $64.00	637.82	
Trestle superstructure, 110.5 lin. ft. at $14.50	1,602.25	
18-inch concrete pipe, 45 lin. ft. at $3.00	135.00	
36-inch concrete pipe, 57 lin. ft. at $9.00	513.00	
14 ft. by 30 ft. float, lump sum	1,191.00	
60 ft. truss span, lump sum	1,450.00	
Treated piling, 769 lin. ft. at $1.05	807.45	
Untreated piling, 2,732 lin. ft. at 45c	1,229.40	
18-inch logs, 269 lin. ft. at 20c	53.80	
Bridge excavation, all	10.00	
Earth cushion, 2,184 4 cu. yds. at 40c	873.76	
Earth cushion haul, 5,438.5 yd. mi. at 20c	1,087.70	
Stripping earth pits, 458.4 cu. yds. at 30c	137.52	
Treated piling cut-off, 28 lin. ft. at 79.8c	22.34	
Untreated piling cut-off, 41 lin. ft. at 17.85c	7.32	
Force account items:		
Clearing channel, building culvert cradle and removing culvert pipe	40.17	
Replacing sand on fills	291.38	
Total amount paid to contractor		18,077.96
Grand total cost of project, all state funds, 1929-30		$ 19,646.90

Waldport-Yachats Grading

Federal Aid Project No. 144-A

On the Roosevelt Coast Highway, from Sta. 1407+10, which station is at the intersection of Arrow and Hemlock Streets in Waldport, south to Sta. 1873+70, which station is at the north end of the bridge over the Yachats River; 8.82 miles of grading, 24 feet between ditches, Sta. 1407+07-1515, 26 feet, Sta. 1515-1562, Sta. 1580-1647, Sta. 1738-1873+35, and 30 feet, Sta. 1562-1580, Sta. 1647-1738.

Contract No. 1093 awarded May 23, 1929, to the Edlefsen-Weygandt Company of Portland, Oregon. Work commenced June 3, 1929; completed August 31, 1930. Estimated cost, $157,000. Resident Engineer, Carl A. Peterson.

[LINCOLN]

The route selected for this section of highway was between the beach and the Pacific Spruce Corporation railroad. This route eliminated all crossings of the railroad, but required the construction of 1,500 lineal feet of sea wall and the moving of 8,600 lineal feet of railroad where a right-of-way conflict occurred. The construction of the new railroad grade which included the construction of two trestles was included in the highway grading project and the placing of the ties, rails and ballast on the railroad roadbed was done by the Pacific Spruce Corporation, operators of the railroad. Payment for this work was made to the railroad company under a special price agreement.

The completion of this project marks the elimination of another section of beach road which for many years has furnished the only, though hazardous, method of travel along many miles of the Pacific Ocean.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 7,972.35
Labor and materials furnished by state:		
Moving Pacific Spruce Corporation railroad where locations conflict		14,796.72
Purchase of right-of-way		45.00
Royalty on borrow materials		50.00
Clearing ditches and culverts		117.67
Signs for traffic control		7.38
Assisting traffic over soft roadbed		178.00
Contract items as follows:		
Clearing and grubbing, all	$ 15,400.00	
Common excavation, 146,651.9 cu. yds. at 27c	39,596.01	
Solid rock excavation, 14,939 cu. yds. at $1.00	14,939.00	
Solid rock excavation (sea wall), 476.6 cu. yds. at $1.25	595.75	
Overhaul, 154,796 yd. stas. at 2c	3,095.92	
Truck haul, 9,759 yd. mi. at 18c	1,756.62	
Class "A" concrete, 295.89 cu. yds. at $25.00	7,397.25	
Rubble masonry, 1,806.26 cu. yds. at $15.50	27,997.03	
Riprap, 3 cu. yds. at $5 00	15.00	
Metal reinforcement, 27,971.99 lbs. at 6c	1,678.32	
Lumber and timber, 81 M-FBM at $58.00	4,698.00	
Timber piling, 7,844 lin. ft. at 54c	4,235.76	
2 ft. x 2 ft. timber culvert, 37 lin ft. at $1.25	46.25	
3 ft. x 3 ft. timber culvert, 67 lin. ft. at $2.25	150.75	
6 ft. x 8 ft. timber culvert, 30 lin. ft. at $7.00	210.00	
12-inch concrete pipe, 567 lin. ft. at $1.15	652.05	
18-inch concrete pipe, 738 lin. ft. at $2.15	1.586.70	
24-inch concrete pipe, 1,416 lin. ft. at $2.90	4,106.40	
30-inch concrete pipe, 347 lin. ft. at $4.30	1,492.10	
36-inch concrete pipe, 96 lin. ft. at $5.60	537.60	
6-inch porous drain tile, 1,328 lin. ft. at 20c	265.60	
Concrete guard rail, 85 cu yds. at $25.00	2,125.00	
Sidewalk, 1,806 sq. ft. at 26c	469.56	
Concrete curb, 903 lin. ft. at 66c	595.98	
Force account items:		
Building log mat under culvert	97.84	
Clearing trees which fell during winter on right-of-way	410.32	
Total amount earned by contractor	$134,150.81	
Deduction for final estimate in process of payment	3,992.44	
Total amount paid to contractor		130,158.37
Total amount expended on project, 1929-30		$153,325.49

PARTICIPATION IN COST

	State	*Government*	*Total*
Expenditures to date	$ 79,654.97	$ 73,670.52	$153,325.49
Estimated cost to complete	Cr. 9,582.00	13,256.51	3,674.51
Estimated total cost	$ 70,072.97	$ 86,927.03	$157,000.00

Waldport Section Forest Road Project

Following the survey and adoption of the route of the Alsea Highway to connect with the located line of the Roosevelt Coast Highway on Arrow Street in Waldport, the Bureau of Public Roads awarded a contract May 15, 1930, to Fred H. Slate for the grading of 1.2 miles on the Alsea Highway and the grading of a wye connection to the ferry slip. The work was officially begun June 10, 1930, and was satisfactorily completed on September 22, 1930.

Bids were received by the Bureau September 19, 1930, for the construction of the Lint Slough Bridge to replace the county bridge east of Waldport. The contract was awarded to O. N. Pierce.

The estimated cost of the grading and bridge is $41,000, the state's share being $28,000 and the government's share $13,000. The state has advanced its entire share and the government has expended $11,389.35, making the total expenditure to date of $39,389.35.

Yachats-Lane County Line Grading

Federal Aid Project No. 144-C

On the Roosevelt Coast Highway, from Sta. 151+47.5, which station is at the south end of the bridge over the Yachats River, south to Sta. 0+00, which station is at the Lane-Lincoln County Line; 2.85 miles of grading, 24 feet between ditches.

Contract No. 1140 was awarded December 12, 1929, to Wren and Greenough of Portland, Oregon. Work commenced January 14, 1930; estimated cost, $187,000 consisting of $134,334.76 from state funds and $52,665.24 from government funds. Expenditures to date have been $96,714.97 from state funds and $19,977.43 from government funds. Resident Engineer, Carl A. Peterson.

This section crosses rugged Cape Perpetua at an elevation of 225 feet above the ocean, presenting many wonderful marine and rock shore scenes. Some heavy rock construction was involved and it was feared that the heavy blasting required might cause a loss of bench, but the contractors handled this feature of the work very carefully and finished a satisfactory job on time, using two shovels, trucks, dumptors and one 60 cat and scraper. A half viaduct on the cape itself and a bridge over an ocean bight near the south end of the section are planned to be constructed under a future contract.

Pioneer Mountain-Eddyville Regrading

Federal Aid Project No. 150-A

On the Corvallis-Newport Highway, from Sta. 22+57, which station is at the east foot of the Pioneer Mountain grade about seven miles east of Toledo, east to Sta. 1715+00, which station is near the east end of the Yaquina River bridge at Eddyville; 10.10 miles of grade widening, 24 feet between ditches.

Contract No. 1187, awarded April 30, 1930, to S. H. Newell and Company, of Portland, Oregon. Work commenced May 1, 1930. Estimated cost, $64,000 consisting of $25,682.07 from state funds and $38,317.93 from government funds. Expenditures to date have been $34,747.01 from state funds. Resident Engineer, Thomas A. Rice.

This section of highway was constructed several years ago and the macadam surface had become so worn that resurfacing was necessary. However, due to a narrow roadbed with considerable sharp curvature, it was deemed advisable, prior to resurfacing, to widen and straighten the roadway to conform with modern traffic requirements. A contract was awarded in May, 1930, for this work, but due to inadequate equipment, the contractor has failed to complete the project by the specified completion date which was September 30, 1930. While the job was about three-fourths complete, on that date, fall rains and the necessity of keeping the road open to traffic prevents the work progressing during the winter months and it will, accordingly, not be completed until the summer of 1931.

Salmon River Forest Road Project

The Salmon River Highway begins at the junction with the Roosevelt Coast Highway at Otis in Lincoln County; follows up Salmon River easterly through the southeast corner of Tillamook County and over the low summit of the Coast Range in Polk County, and thence east through the town of New Grande Ronde to connect with the McMinnville-Tillamook Highway at Valley Junction. The total length of the highway is 21.92 miles.

The desire for the improvement of the Salmon River route led to the formation of the Grande Ronde-Salmon River Improvement District approved by an election held May 21, 1926. The names of the members of the board of trustees and other details concerning the early activities of the district are included in an article on page 393 of the 1925-26 report.

The first construction project was let by the Bureau of Public Roads May 11, 1927, to E. L. Gates. This contract covered the clearing of a 6-mile section westerly from the Polk County Line into Tillamook and Lincoln Counties and the grading of the Pitner Section, being the west 4.2 miles of the 6-mile clearing section. The final cost of this improvement amounted to $95,741.85 from government funds.

On June 14, 1928, the grading of the Boyer Section, 1.85 miles in length, and extending westerly from the Polk County Line, was awarded by the Bureau to Von der Hellen & Pierson, the final cost amounting to $54,143.26, all expended from government funds.

The surfacing of the above two sections was provided for by a contract let May 28, 1929, to Doggett & Cooper. This 6-mile section was completed in 1929, the final costs, however, have not been reported to date.

A contract was let October 14, 1929, to Howard McMillan for clearing the westerly 3.7 miles of the highway at a contract price of $10,900.

The grading of the section from Rose Lodge easterly, 3.5 miles in length was awarded June 4, 1930, to Fred H. Slate, who will complete his contract in October, 1930. Separate costs on this project have not been reported.

The 4.03-mile section westerly from Rose Lodge to connect with the Roosevelt Coast Highway was awarded July 10, 1930, to Yunker-Wieks Company for grading and grubbing, the section having been cleared during the spring of 1930. At the date of this report there remained uncompleted approximately 1,500 feet of light work near Rose Lodge and a heavy rock cut on the westerly end of the project. It is expected that the rock work will be completed this fall, leaving some light grading and finishing in the early 1931 season.

Bids will be received in November for the construction of five bridges and one culvert near Rose Lodge. There will then remain only the surfacing of the west eight miles to complete the highway from Otis to Grande Ronde.

Rocky Creek Bridge

Federal Aid Project No. 110-A

On the Roosevelt Coast Highway, 11 miles north of Newport; eight 20-foot concrete spans, one 160-foot concrete arch and two 23½-foot concrete spans with 20-foot clear roadway.

Contract No. 887, awarded May 25, 1926, to H. E. Doering, of Portland, Oregon. Work commenced July 16, 1926; completed August 1, 1927. Final cost, $59,336.89. Resident Engineer, J. T. Skelton.

This bridge was completed during the preceding biennium and the account was opened this biennium only to record the final payment of $7,976.92 to the contractor.

Further details will be found on page 371 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 3,429.63
Name plates		150.27
Bull's eye for traffic warning		6.50
Contract items as follows:		
Excavation, 260 cu. yds. at $5.00	$ 1,300.00	
Excavation below elevation shown, 140 cu. yds. at $12.00	1,680.00	
Class "A" concrete, 964 cu. yds. at $32.00	30,848.00	
Class "D" concrete, 246 cu. yds. at $33.00	8,118.00	
Metal reinforcement, 185,750 lbs. at 5½c	10,216.25	
Handrail, 751.1 lin. ft. at $4.50	3,379.95	
Steel anchor wedges, 64 at $1.60	102.40	
Force account items:		
Build field office at bridge site	71.03	
Special finish on south approach and arch tower	390.44	
Alter bracket ends	10.18	
Total amount earned by contractor	$ 56,116.25	
Deductions:		
For cement adjustment, 72.75 bbls. at $4.35	316.46	
For removal of plank from roadbed	49.30	
Total amount paid contractor		55,750.49
Grand total cost of structure		$ 59,336.89

PARTICIPATION IN COST

	State	*Government*	*Total*
Expended 1925-26 biennium	$ 6,349.58	$............	$ 6,349.58
Expended 1927-28 biennium	14,962.24	30,048.15	45,010.39
Expended 1929-30 biennium	7,976.92	....	7,976.92
Total of expenditures	$ 29,288.74	$ 30,048.15	$ 59,336.89

[LINCOLN]

Reconstruction of Monterey Undercrossing

On the Roosevelt Coast Highway near Agate Beach; replace wood stringers with steel I-beams.

The highway north of Newport passes under the tracks of the old Spruce Division railroad. At the time of grading the highway it was expected that this railroad would be abandoned and the track was temporarily supported by a bent in the center of the highway. With the resumption of logging operations this bent was replaced by steel I-beams spanning the entire roadway. This work was done by a state bridge maintenance crew under the direction of E. G. Ricketts. The final cost amounted to $2,854.03 from state funds.

Big Creek Bridge

On the Roosevelt Coast Highway four miles south of Waldport; two 35-foot and one 50-foot continuous concrete spans, with 24-foot clear roadway.

Contract No. 1095, awarded May 23, 1929, to C. A. Catching, of Roseburg, Oregon. Work commenced June 6, 1929; completed October 26, 1929. Final cost, $13,734. Resident Engineer, J. A. Weber and S. M. P. Dolan.

This bridge is on the newly completed section between Waldport and Yachats. It will eliminate the necessity of fording the creek on the old beach route where many cars have been lost during the winter seasons.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,066 48
Name plates		20.20
Contract items as follows:		
Excavation, 141.58 cu. yds. at $4.00	$ 566.32	
Excavation below elevation, 26.07 cu. yds. at $10.00	260.70	
Foundation piling, 1,298.8 lin. ft. at 50c	649.40	
Class "A" concrete, 210.62 cu. yds. at $26.00	5,476.12	
Class "D" concrete, 81.32 cu. yds. at $25.00	2,033.00	
Metal reinforcement, 53.227 lbs. at 5c	2,661.35	
Concrete handrail, 255 lin. ft. at $4.50	1,147.50	
Total amount earned by contractor	$ 12,794.39	
Deduction for cement adjustment, 39.75 bbls. at $3.70	147.07	
Total amount paid to contractor		12,647.32
Grand total cost of structure, 1929-30		$ 13,734.00

PARTICIPATION IN COST

	State	*Government*	*Total*
Expenditures to date	$ 6,468.60	$ 7,265 40	$ 13,734.00
Estimated cost to complete Cr.	893.51	893.51	
Estimated total cost	$ 5,575.09	$ 8,158.91	$ 13,734.00

North Alsea Bay Ferry Slip and Approach

On the Roosevelt Coast Highway on the north side of Alsea Bay near Waldport; eleven 19-foot pile trestle spans; one 60-foot Howe truss span with 15 x 30-foot float.

Contract No. 1177, awarded March 27, 1930, to J. F. Johnston, of Newberg, Oregon. Work commenced April 1, 1930; completed September 30, 1930. Estimated cost, $10,000, all from state funds. A total of $8,797.77 has been expended from state funds to date. Resident Engineer, S. M. P. Dolan.

This ferry slip makes a connection with the newly constructed section of the Roosevelt Coast Highway between Alsea Bay and Yaquina Bay. Pressure treated creosoted piling were used as a protection against marine borers. All construction work has been completed but final settlement has not been made.

Maintenance

Improved state highways under maintenance in Lincoln County comprise 100.99 miles of road, of which 11.65 miles are of bituminous macadam, 30.35 miles are of oiled macadam, and 58.94 miles are of untreated macadam.

The Roosevelt Coast Highway has been re-oiled from the Siletz River bridge south five miles, and on several other sections north of Newport. Between Newport and Toledo on the Newport-Corvallis Highway, re-oiling has been required. During the biennium a total of 4.44 miles of untreated macadam have been oiled and 27.59 miles of oiled macadam have been re-oiled.

The slide at Schooner Creek on Siletz Bay given particular note in the report for 1927-28, has given no further material trouble since the winter of 1928-1929. Some very slight movement of the remaining portion of the slide has been noted but not sufficient to cause any interference with the highway.

Maintenance work on the Corvallis-Newport Highway and on the Roosevelt Coast Highway from Siletz River to Newport has been handled by T. A. Rice, Resident Maintenance Engineer, at Newport. Maintenance on the Alsea Highway and Roosevelt Coast Highway south of Waldport has been handled by A. A. Amort and I. A. DeFrance, successive Resident Maintenance Engineers at Corvallis. Maintenance of the section of the Roosevelt Coast Highway from the Siletz River to the Tillamook County line has been handled by Geo. S. Gray, Resident Maintenance Engineer with headquarters at Tillamook.

There have been expended during the biennium, for general maintenance and minor betterment work in the county, the amounts of $150,699.83 and $4,526.43 respectively.

Newport-Waldport Survey

The work described in the previous report was continued during the past biennium and the location was completed from Seal Rocks to Alsea Bay, and the section placed under contract for grading by the Bureau of Public Roads.

Additional study has been made of the location for the bridge crossing at Yaquina Bay and connections thereto, but permission to build on a line from the town of South Beach to McLean Point was refused by the War Department.

A sand spit lying west of this line with a top elevation of about 12 feet is increasing in size and height, and a connection from South Beach to the new ferry slip was located on it. This shortenend the length of the ferry crossing one-third and the fill required on top of the spit was, of course, much less than would have been required on the bridge line location.

The field work on this survey has been done under the supervision of T. A. Rice, Resident Engineer, Newport, Oregon.

Further details may be found on page 377 of the 1927-1928 report.

Waldport Connection Survey

The county bridge over Lint Slough east of Waldport required extensive repairs, so a location was made for a connection from the Alsea Highway to the located line of the Roosevelt Coast Highway on Arrow Street, which had been selected for the south approach to the future bridge over Alsea Bay. The grading of the Lint Slough section has been placed under contract by the Bureau of Public Roads.

A total of 1.35 miles of survey line was located by Resident Engineer, Carl A. Peterson, from May 26, to July 25, 1930, in connection with other survey and construction work being carried on in that locality.

Waldport-Yachats Survey

After the completion of the survey described in the previous report, a decision was made to relocate the line to avoid grade crossings of the logging railroad by keeping between the railroad and the ocean. This required the moving of about 8,600 feet of railroad to a new location farther east and the construction of a sea wall along the bay at Waldport. The revised location not only eliminated the grade crossings but provided better alignment.

Field work on the relocation survey was made under the direction of Carl A. Peterson, Resident Engineer, Waldport.

Further details may be found on page 378 of the 1927-28 report.

Yachats-Lane County Line Survey

This section was located in 1925, and in 1929 the line was retraced and staked in preparation for construction. In order to reduce the yardage of excavation it was designed to use truck haul, which permits longer end haul and places waste in fills.

The survey was made during April, 1929, by Carl A. Peterson, Resident Engineer, Waldport.

A descriptive article covering the original survey may be found on page 372 of the 1925-26 report.

Toledo-Eddyville Survey

This section though graded and surfaced is, like many others, narrow and winding, and needs resurfacing. A relocation was made by T. A. Rice, Resident Engineer, in the early months of 1929, securing much better alignment.

LINN COUNTY

During the past two years macadam surfacing has been placed on the Santiam Highway in Linn County from Lebanon to Shea's Hill, 17.2 miles, and covered with a bituminous macadam. Grading and surfacing from Cascadia to the old Ranger Station, which was started in 1928, has been finished and grading from Ranger Station to Bryant Hill is 90 per cent complete. It is planned to call for bids in December, 1930, for the grading of a three-mile section from Bryant Hill to Trout Creek. This section is located on the north bank of the Santiam River, the line crossing the river at Bryant Hill.

Non-skid treatment has been placed on all of the bituminous pavement on the Pacific Highway in the county, with the exception of a section extending from a point one mile north to a point three miles south of Albany, which section will be done in the summer of 1931. A section of the Pacific Highway between Tangent and Shedd which had deep borrow pits on each side has been widened to provide twelve-foot shoulders.

State highway work in Linn County has been carried on under the direction of J. S. Sawyer and E. A. Collier, successive Division Engineers, with headquarters at Salem.

Cascadia-East Forest Road Project

This project is 2.75 miles in length and extends easterly from Cascadia to the Cascadia Ranger station. The grading was completed June 18, 1930, the final cost being $36,311.57, consisting of $16,500 from Linn County funds and $19,811.57 from government funds. Surfacing materials for the base course on this project were stockpiled at Cascadia under the contract for surfacing the Shea's Hill-Cascadia Forest Road project.

Further details will be found on page 381 of the 1927-28 report.

Unit No. 2, Shea's Hill-Cascadia Forest Road Project

The above project, 6.62 miles in length, extends from the easterly end of the Shea's Hill Section to Cascadia. The grading of the project was under contract to E. L. Gates of Portland, Oregon, who began grading operations in the summer of 1926, and completed his contract in the summer of 1927. The total expenditures for grading amounted to $80,000, the government providing $40,000 and Linn County $40,000.

The surfacing of the section was contracted by the Bureau of Public Roads in 1927 to R. W. Shaffer of Portland. Surfacing work was begun in the summer of 1927 and completed early in the summer of 1928. The contract with Mr. Shaffer was extended to provide base course surfacing for the Cascadia-East Section. This material was stockpiled at Cascadia and was placed under a separate contract.

Further details will be found on page 383 of the 1927-28 report.

[LINN]

Lebanon-Shea's Hill Surfacing

On the Santiam Highway, from Sta. 806+00, which station is in the city of Lebanon at the intersection of Main Street with the south corporate limit line, east to Sta. 1715+50, which station is approximately one mile east of the town of Foster; 17.24 miles of crushed gravel surfacing, 12 inches in depth and 16 feet wide. Seven inches of sub-base in two courses, three inches of base and two inches of top materials and the furnishing of maintenance materials.

Contract No. 1048, awarded August 14, 1928, to John J. Dann of Portland, Oregon. Work commenced August 22, 1928; completed December 24, 1929. Final cost, $125,059.37. Resident Engineer, E. E. Umphlette.

This project was undertaken during the previous biennium and further details will be found on page 380 of the 1927-28 report.

In addition to the work contemplated under the original contract, crushed gravel was stock-piled on the adjacent Shea's Hill Section, this rock being for contemplated oiling work on that unit. The production of this material and payment for it was covered by a supplemental agreement with the contractor.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 7,435.63
Royalty on filler material		87.63
Lease of stock pile sites		55.00
Paving bridge decks		175.23
Constructing approach roads		71.50
Constructing tile drains		57.26
Digging drainage ditches		64.40
Clearing ditches and culverts and repairing washouts		501.43
Maintaining completed portions of surfacing		48.75
Sprinkling surfacing materials		4,721.85
Preparing stock pile sites		87.23
Signs for traffic control		9.60
Shooting filler pit and replacing fence around pit		68.51
Sprinkling subgrade		191.00
Contract items as follows:		
Sub-base course surfacing, 31,501.5 cu. yds. at $1.43	$ 45,047.15	
Base course surfacing, 14,082.5 cu. yds. at $1.43	20,137.98	
Top course surfacing, 9,760.5 cu. yds. at $1.43	13,957.52	
Grade "A" maintenance materials, 3,470.5 cu. yds. at $1.37	4,754.59	
Grade "B" maintenance materials, 5,169 cu. yds. at $1.37	7,081.53	
Grade "C" maintenance materials, 5,159.5 cu. yds. at $1.37	7,068.52	
Filler, 11,452.5 cu. yds. at 40c	4,581.00	
Filler haul, 22,184.1 yd. mi. at 17c	3,771.30	
Waste screenings, 6,425 cu. yds. at 25c	1,606.25	
Waste screenings haul, 12,910.7 yd. mi. at 17c	2,194.82	
Grade "B" maintenance materials, 502 cu. yds. at 75c	376.50	
Force account items:		
Clear and grub stock pile sites	165.09	
Clear filler pit sites and repair haul roads	593.35	
Blade material from side ditches	500.20	
Total earned by contractor	$111,835.80	
Deduction for haul adjustment	351.45	
Total amount paid to contractor		111,484.35
Grand total cost of project		$125,059.37

PARTICIPATION IN COST

	State	*County*	*Total*
Expended 1927-28 biennium	$ 704.54	$ 7,570.06	$ 8,274.60
Expended 1929-30 biennium	68,612.65	48,172.12	116,784.77
Total of expenditures	$ 69,317.19	$ 55,742.18	$125,059.37

Lebanon-Shea's Hill Grading

On the Santiam Highway, from Sta. 806+00, which station is in the city of Lebanon at the intersection of Main Street with the south corporate limit line, to Sta. 1715+50, which station is approximately 1.0 mile east of the town of Foster; 17.24 miles of grading, 30-foot roadbed not including ditches.

Contract No. 980, awarded June 23, 1927, to the Slate Construction Company of Albany, Oregon. Work commenced June 25, 1927; completed December 28, 1928; final cost, $163,640.67. Resident Engineer, E. E. Umphlette.

The work under the original contract covering this project was practically complete at the close of the previous biennium and a description in considerable detail will be found on pages 381-382 of the 1927-28 report. However, several large slides occurred at the "Narrows" during the winter of 1928, and an arrangement was made with the contractor to retain sufficient equipment on the job, until the spring of 1929, to remove this material. This supplemental work was performed by the contractor on a force account basis and was completed during September, 1929.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 11,419.75
Sprinkling and maintaining new grade		321.79
Contract items as follows:		
Clearing and grubbing, all required, lump sum	$ 9,000.00	
Extra clearing, all required, lump sum	130.00	
Extra clearing and grubbing, 5.91 acres at $300.00	1,773.00	
Common excavation, 131,018.3 cu. yds. at 34c	44,546.22	
Intermediate excavation, 55,699.9 cu. yds. at 34c	18,937.97	
Solid rock excavation, 18,492.3 cu. yds. at $1.05	19,416.91	
Overhaul, 262,036 yd. stas. at 5c	13,101.80	
Truck haul, 3,313 cu. yd. mi. at 23c	761.99	
-inch concrete pipe, 2,190 lin. ft. at $1.20	2,628.00	
18-inch reinforced concrete pipe, 990 lin. ft. at $2.00	1,980.00	
24-inch reinforced concrete pipe, 286 lin. ft. at $2.80	800.80	
36-inch reinforced concrete pipe, 205 lin. ft. at $5.00	1,025.00	
Class "A" concrete, 378.42 cu. yds. at $25.00	9,460.50	
Metal reinforcement, 33,840 lbs. at 7c	2,368.80	
Lumber and timber, 137.686 M-FBM at $50.00	6,884.30	
Timber piling, 2,078.6 lin. ft. at $1.00	2,078.60	
Pit gravel, 66 cu. yds. at 75c	49.50	
Gravel haul, 460 yd. mi. at 10c	46.00	
Rubble masonry, 621.67 cu. yds. at $6.00	3,730.02	
Grout, 75.18 cu. yds. at $20.35	1,529.91	
6" porous drain tile, 2,154 lin. ft. at 25c	538.50	
Rock backfill, 238 cu. yds. at $2.50	595.00	
Guard fence material, 31.0 M-FBM at $41.44	1,284.64	
Force account items:		
Remove and replace portions of rock wall to lower footings	172.36	
Furnish and place pipe culvert extensions	89.51	
Remove slide material at the "Narrows"	8,969.80	
Total amount paid to contractor		151,899.13
Grand total cost of project		$163,640.67

PARTICIPATION IN COST

	State	*County*	*Railroad*	*Total*
Expended 1927-28 biennium	$ 56,463.07	$ 46,223.61	$ 23,898.06	$126,584.74
Expended 1929-30 biennium	10,782.41	11,187.83	15,085.69	37,055.93
Total of expenditures	$ 67,245.48	$ 57,411.44	$ 38,983.75	$163,640.67

Unit No. 5 Willamette Valley Rock Production Project

On the Pacific Highway, from end of concrete pavement 7 miles south of Salem, to Tangent; 18.76 miles of furnishing crushed rock in stock piles, in two sizes; 1¼ to ¾-inch and ¾ to ¼-inch.

Contract No. 1164 was awarded March 17, 1930, to J. H. Gallagher of Portland, Oregon. Work commenced April 8, 1930; completed June 23, 1930. Final cost, $18,378.82. Resident Engineer, I. A. DeFrance.

This project was undertaken for the production of rock to be used for non-skid treatment of bituminous pavement, the contract contemplating the furnishing of crushed rock and gravel from Saddle Butte and from the Willamette River at Albany. The material produced from the Saddle Butte quarry was of a very good quality, but due to a large proportion of soft gravel in the material taken from the river at Albany, the contractor was released from furnishing the rock from that source and his contract terminated.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 710.26
Labor and materials furnished by State:		
Freight on rock, cost to state		2,580.18
Lease on stock pile sites		46.00
Prepare stock pile sites		299.53
Signs for traffic control		6.54
Contract items as follows:		
Broken stone through Jefferson, 3,750.22 cu. yds. at $3.15	$ 11,813.19	
Broken stone through Tangent, 1,328.9 cu. yds. at $2.65	3,521.59	
Crushed gravel through Albany, 219.81 cu. yds. at $1.50	329.72	
Truck haul, 6,508.43 yd. mi. at 20c	1,301.69	
Adjustment on materials delivered at mile 71.5, 1,011.32 cu. yds. at 21c	212.38	
Shoulder rock, 261.55 cu. yds. at $2.50	653.88	
Total amount earned by contractor	$ 17,832.45	
Deduction for freight on rock	3,096.14	
Total amount paid to contractor		14,736.31
Grand total cost of project, all state funds, 1929-30		$ 18,378.82

Ranger Station-Bryant Hill Grading

On the Santiam Highway, from Sta. 1684+00, which station is at the U. S. Forest Service ranger station about three miles east of Cascadia, east to Sta. 1783+50; 1.87 miles of grading, 20-foot roadbed between ditches.

Contract No. 1141, awarded December 12, 1929, to Harmon and Tittle of Eugene, Oregon. Work commenced January 7, 1930. Estimated cost, $62,000, being $5,000 from state funds and $57,000 from county funds. Expenditures to date, $37,870.05, consisting of $2,668.26 from state funds and $35,201.79 from county funds. Resident Engineer, J. C. Chapman.

This section, which is being constructed on the south side of the Santiam River, extends from the U. S. Forest Service ranger station past Elephant Rock to the proposed crossing of the river, near Bryant Hill. All of the work was sub-contracted to Anderson Bros., whose progress has been rather slow. The project was about 90 per cent finished at the close of the biennium, but due to the adverse conditions normally occasioned by winter weather in this locality, completion will be prevented until the spring of 1931.

Tangent-Shedd Roadbed Widening

Federal Aid Project No. 56-A

On the Pacific Highway from Sta. 406+00, which station is about 1.5 miles south of the town of Tangent, south to Sta. 530+00, which station is about 2.0 miles north of the town of Shedd; 2.37 miles of roadbed widening and a gravel shoulder construction.

Contract No. 1212, awarded July 24, 1930, to Earl L. McNutt of Eugene, Oregon. Work commenced July 29, 1930. Estimated cost, $33,000, being $13,460.10 from state funds and $19,539.90 from government funds. Expenditures to date, $6,528.97 from state funds. Resident Engineer, J. C. Chapman.

The narrow shoulders and deep borrow pits of this two-mile section across the Calapooya River bottoms have resulted in many accidents of a serious nature. Accordingly, this project was undertaken which consists of the construction of 12-foot earth shoulders on each side of the existing paving, and the surfacing of the shoulders with gravel, 12 inches deep, at the edge of the pavement, tapering to a depth of 6 inches at a point ten feet out.

The contractor is making very good progress on this work, using a power shovel and trucks, for the grading operations. Gravel for the surfacing is being obtained from the Willamette River at a point approximately 6 miles west of the project. It is anticipated the work will be finished during the early part of October, 1930.

Dobbin, Wolf and Canyon Creek Bridges

On the Santiam Highway between Cascadia and the forest boundary; described as follows: Dobbin Creek, two 30-foot and one 40-foot concrete spans; Wolf Creek, two 20-foot and one 40-foot concrete spans; Canyon Creek, one 40-foot, one 50-foot and one 70-foot concrete spans.

Contract No. 1223, awarded August 28, 1930, to C. A. Catching, of Roseburg, Oregon. Work commenced September 1, 1930. Estimated cost, $25,000, all from state funds. No expenditures appear to date. Resident Engineer, L. C. Smitton.

All of these bridges are on the section of the Santiam Highway just east of Cascadia. The contractor has his equipment on the ground and has started work on the Dobbin Creek structure.

Maintenance

At the close of the present biennium there are under maintenance in Linn County a total of 74.03 miles of state highways, consisting of 24.42 miles of bituminous pavement, 9.60 miles of concrete pavement, 17.62 miles of bituminous macadam and 22.39 miles of oiled macadam.

All maintenance work on constructed state highways in Linn County has been handled by A. A. Amort and I. A. DeFrance, successive Resident Maintenance Engineers, Corvallis, Oregon. This work has consisted of pavement repair, shoulder and drainage maintenance, patching oiled macadam and keeping highway right of way presentable by removing weeds, papers and signs; 13.24 miles of oiled macadam between Albany and Lebanon were re-oiled in 1929.

During the biennium, expenditures for general maintenance have amounted to $61,935.45 and for major betterments, $240.97.

Grade Crossing Elimination at Albany Survey

The Pacific Highway crosses the Southern Pacific and Oregon Electric tracks at grade in East Albany. The Santiam Highway crosses the two railroads a few blocks south. Numerous bad accidents have occurred here, and so a grade elimination survey was started in 1929. Nine lines have been run on the ground and others projected, and maps and estimates prepared using both overhead and under crossings, and a location without crossing by keeping between the Southern Pacific and the Oregon Electric from Murder Creek to Albany which would involve shifting the Oregon Electric westerly. After a hearing before the Public Service Commission at Albany, the chairman appointed a committee of five engineers, consisting of State Highway Engineer Roy A. Klein, County Engineer Chas. H. Leonard, Public Service Engineer Lester and a representative from each interested railroad to study these plans and select the best for all concerned. No decision has been reached to date.

The field engineering work was made under the supervision of Resident Engineer E. E. Umphlette. A total of 11.48 miles were run on the ground.

Tangent-Shedd Survey

During 1930 a survey was made and plans prepared for widening the narrow section of the Pacific Highway from a point approximately 1.33 miles south of Tangent to a point approximately 1.85 miles north of Shedd, over a length of 2.37 miles. It was necessary to acquire additional right of way prior to the letting of the contract for widening in July, 1930. The survey was made under the supervision of Resident Engineer J. C. Chapman.

Lebanon-Shea's Hill Survey

During early months of 1928 a short relocation was made through the "Narrows" of the Santiam, 2½ miles west of Sweet Home, to permit construction of Oregon Electric Railroad between the highway location and the river. The expenditures during 1929-30 were for delayed charges from 1928.

The location survey of this section was completed in 1927, but right-of-way posts were set and bench levels run during February, 1930, by Resident Engineer J. C. Chapman. A descriptive article on the location survey will be found on page 385 of the 1927-28 report.

Cascadia Ranger Station-East Survey

In preparation for the construction of the Ranger Station-Bryant Hill Section, surveys and plans were completed in 1929 by E. E. Umphlette, Resident Engineer, and some reconnaisance work was done farther up the river, from which it appeared a survey on the north bank would be warranted. A survey up the south bank to a mile above Upper Soda had previously been made by the Bureau of Public Roads. This survey is being continued during the fall of 1930, and after selection of route is made, another section will be placed under contract for grading. J. C. Chapman, Resident Engineer, and B. A. Martin, Locating Engineer, have worked on this during 1930, having relocated a total of 14 miles.

Further details may be found on page 386 of the 1927-28 report.

MALHEUR COUNTY

Highway development in Malheur County during the biennium has been of considerable magnitude, the principal work consisting of major betterment on the Old Oregon Trail and John Day Highways, and new construction on the Central Oregon Highway.

The Central Oregon Highway within the limits of Malheur County was in a very preliminary stage of development prior to the 1929-30 biennium, the only completed section being about seven miles of untreated macadam between Vale and Burrelle Ranch. However, during the biennium, contracts have been awarded for 34.62 miles of grading, 15.3 miles of surfacing, 7.01 miles of resurfacing, and 22.4 miles of oil mat surface treatment. Work has been completed on all of the contracts with the exception of approximately 14.0 miles of grading which will be completed early in the year 1931. Completion of these contracts will result in the improvement of a 42.0-mile continuous section extending westward from Vale.

On the Old Oregon Trail major betterment work undertaken during the biennium consisted of the regrading and resurfacing of the Snake River Slides section and the Dead Ox Flat section, and the construction of a bituminous macadam wearing surface on the Snake River Slides section. The resurfacing of the Dead Ox Flat section will probably not be completed until the spring of 1931.

On the John Day Highway in Malheur County there has been constructed during the current biennium a total of 24.10 miles of road mix oil surface treatment, extending from Ironside to Brogan.

In addition to the construction work performed the location survey of the Central Oregon Highway has been completed as far west as Juntura, approximately 60 miles west of Vale.

A state-owned maintenance patrol headquarters has been established in Ontario, and a frame storage and shop building was constructed in 1929.

H. G. Smith, Division Engineer with headquarters at La Grande, has had general supervision over all the highway work in Malheur County.

Cow Valley-Brogan Surfacing

Federal Aid Project No. 17

On the John Day Highway, from a point 6½ miles west of the town of Brogan, to a point near the west limits of Brogan; 6.1 miles of widening on curves and fills, extending culverts, and surfacing with crushed rock.

Contract No. 1025, awarded December 20, 1927, to Joslin & McAllister, of Spokane, Washington. Work commenced January 25, 1928; completed May 17, 1928. Final cost, $41,262.52. Resident Engineer, W. C. Williams.

This project was opened during the past biennium only to record the receipt of $22,364.10 from the government. The final cost of the project now amounts to $41,262.52, of which $18,898.42 was expended from state funds, and $22,364.10 from government funds.

Further details will be found on page 389 of the 1927-28 report.

Vale Oiling Project

On the Old Oregon Trail between Mile Point 395, which point is about five miles south of the Baker County line and Mile Point 434.27 at Nyssa; Central Oregon Highway between Sage Hen Hill and Burns, and between Harper and Vale, and on the John Day Highway between Willow Creek and Brogan, and between Vale and Cairo. 11.40 miles of bituminous macadam, 23.85 miles of road mix; 23.89 miles oil surface treatment and 12.87 miles of reoiling.

Contract No. 1154, awarded March 5, 1930, to J. C. Compton of McMinnville, Oregon. Work commenced April 15, 1930. Estimated cost, $190,000, consisting of $134,695.71 from state funds and $55,304.29 from government funds. Expenditures to date have amounted to $121,561.55 from state funds. Resident Engineer, W. W. Stiffler. A detailed statement of work performed under this contract is as follows:

Snake River Slides Section-Federal Aid Project No. PR67—Malheur County. On the Old Oregon Trail from Mile Point 395, which point is about 9 miles east of Huntington, to Mile Point 403; 8.0 miles of bituminous macadam wearing surface, 18 feet wide and 2 inches in compacted thickness.

Weiser Junction-Ontario-Nyssa Section—Malheur County. On the Old Oregon Trail from Mile Point 409, which point is about 3.4 miles south of the Weiser Junction, to the Snake River Bridge at Nyssa; 11.67 miles of oil mat surface treatment, 18 feet wide and ¼ to ⅝ inch in thickness constructed at intermittent units.

Vale-Cairo Section—Malheur County. On the John Day Highway from Mile Point 283.2, which is about 2 miles east of Vale, to Mile Point 293.2; 1.2 miles of oil mat surface treatment, 18 feet wide and ⅝ inch in compacted thickness. This work was not continuous but at intermittent units.

Sage Hen Hill-Burns Section-Federal Aid Projects 148-A and 148-E —Harney County. On the Central Oregon Highway from the summit of Sage Hen Hill, about 16 miles west of Burns to Burns; 12.23 miles of oil mat surface treatment, 18 feet wide and ⅝ inch in compacted thickness, and 3.41 miles of bituminous macadam wearing surface, 18 feet wide and 2 inches in compacted thickness.

Harper-Vale Section—Malheur County. On the Central Oregon Highway, under contract from Mile Point 235.36 at Harper to Mile Point 258.0 at Vale; from Mile Point 245.9 to Mile Point 257.56, 11.66 miles of oil mat surface treatment, 18 feet wide and ⅝ inch in compacted thickness. The balance of approximately 11 miles untreated this year due to unfavorable weather conditions during the fall months. It is anticipated that the balance of this section will be oiled early in 1931.

Ironside-Brogan Section—Malheur County. On the John Day Highway, from Mile Point 233.9 at the crossing of Willow Creek to Mile Point 237.75 at Brogan; 24.10 miles of road mix oil surface treatment, 18 feet wide and approximately 2½ inches in depth.

Snake River Slides Section-Regrading and Resurfacing

Federal Aid Project No. 67

On the Old Oregon Trail from Sta. 254+66, which station is at Mile Point 395.0, about 9 miles east of Huntington, to Sta. 686+56, which station is at Mile Point 403.0; 8.0 miles of regrading roadbed 26 feet wide, and broken stone resurfacing 18 feet wide and 7 to 8 inches in compacted thickness, supplemented with talus rock shoulders 6 inches in depth and featheredged to a width of 3 feet.

Contract No. 1085, awarded March 29, 1929, to J. W. and J. R. Hillstrom, of Marshfield, Oregon. Work commenced May 13, 1929; completed February 20, 1930. Final cost, $67,180.16. Resident Engineer, J. N. Bishop.

Preliminary to the construction of a bituminous macadam wearing surface, this section was widened and resurfaced. The section was originally graded in 1921 and surfaced in 1922. The original roadbed was narrow and the surfacing, after seven years of traffic, was worn very thin, necessitating a resurface.

In addition to the resurfacing work, the contractor also stockpiled approximately 8,000 cubic yards of crushed rock for use in bituminous macadam construction.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 5,109.70
Labor and materials furnished by state:		
Purchase of quarry site		400.00
Lease and preparation of stock pile sites		40.10
Prospecting for surfacing materials		83.15
Sprinkling surfacing materials		3,228.55
Signs for traffic control		7.50
Contract items as follows:		
Clearing and grubbing, all	50.00	
Common excavation, 2,878.9 cu. yds. at 35c	1,007.62	
Intermediate excavation, 4,249.9 cu. yds. at 70c	2,974.93	
Solid rock excavation, 2,308.4 cu. yds. at $1.00	2,308.40	
Overhaul, 14,668 yd. stas. at 5c	733.40	
Excavation, single classification, 11,128.9 cu. yds. at 35c	3,895.12	
Truck haul, 5,857 cu. yds. at 20c	1,171.40	
12-inch corrugated iron pipe, 102 lin. ft. at $2.50	255.00	
18-inch corrugated iron pipe, 50 lin. ft. at $4.00	200.00	
24-inch corrugated iron pipe, 14 lin. ft. at $6.00	84.00	
36-inch corrugated iron pipe, 8 lin. ft. at $7.00	56.00	
Base course crushed rock, 15,228 cu. yds. at $1.10	16,750.80	
Top course crushed rock, 4,446 cu. yds. at $1.15	5,112.90	
Grade "A" materials, 2,027 cu. yds. at $1.20	2,432.40	
Grade "BC" materials, 1,604.5 cu. yds. at $1.15	1,845.18	
Grade "D" materials, 4,383.4 cu. yds. at $1.10	4,821.74	
Earth filler, 381 cu. yds. at 25c	95.25	
Hauling earth filler, 616.1 yd. mi. at 17c	104.74	
Hauling broken stone (truck measure) 52,545 yd mi. at 17c	8,932.65	
Hauling broken stone (pile measure) 11,656.7 yd. mi. at 17c	1,981.64	
Rock shoulder material, 3,669 cu. yds. at 50c	1,834.50	
Hauling rock shoulder material, 9,697 yd. mi. at 17c	1,648.49	
Stock pile rejections, 60 cu. yds. at 25c	15.00	
Total amount paid to contractor		58,311.16
Grand total cost of project, 1929-30		$ 67,180.16

PARTICIPATION IN COST

	State	*Government*	*Total*
Total of expenditures	$ 43,449.96	$ 23,730.20	$ 67,180.16
Estimated cost to complete	Cr. 10,808.45	10,808.45	
Estimated total cost	$ 32,641.51	$ 34,538.65	$ 67,180.16

Dead Ox Flat and Weiser Spur Regrading and Resurfacing

Federal Aid Propect Nos. 158-A and 67

On the Old Oregon Trail from Mile Point 403.0 which point is 2.65 miles west of the junction of the Weiser Spur, to Mile Point 411.0, which point is about 10 miles north of the business district of Ontario. Also, the Weiser Spur Road which extends from the Old Oregon Trail at Mile Point 405.65, to the Snake River bridge at Weiser; 10.0 miles of regrading roadbed to width of 28 feet, and crushed gravel resurfacing 20 feet wide and approximately 10 inches in thickness, supplemented by gravel shoulders 6 inches in depth, and featheredged to width of 4 feet.

Contract No. 1213, awarded July 29, 1930, to Newport Construction Co. of Portland, Oregon. Work commenced September, 1930. Estimated cost, $122,000 consisting of $71,038.33 from state funds and $50,961.67 from government funds. Expenditures to date, $4,292 from state funds. Resident Engineer, H. J. Miller.

This section was originally graded and surfaced in 1921. Due to the rapid increase of motor vehicle traffic the roadway width was inadequate to carry the traffic in safety and the surfacing, after nine years of use, was practically worn through. Consequently, in line with the policy of the Highway Commission of making needed improvements on existing highways whenever possible, the regrading and resurfacing of this section was put under contract in July, 1930.

Snake River Slides-Ontario Prospecting for Surfacing Materials

Preliminary to resurfacing of the Snake River Slides-Ontario Section of the Old Oregon Trail a thorough investigation was made of the materials available for resurfacing work. No rock suitable for use was found but several deposits of satisfactory gravel were found and test pits excavated for inspection by prospective bidders. This work was done under the supervision of Resident Engineer J. N. Bishop. Expenditures to date have amounted to $1,159.33 from state funds.

Harper-Vale Surfacing and Resurfacing

On the Central Oregon Highway, from Sta. 0+00, which station is about one-half mile opposite (South) the town of Harper, to the intersection of "A" street and West street in the town of Vale; 15.30 miles of broken stone and crushed gravel surfacing, and 7.01 miles of crushed gravel resurfacing and grade widening. Both crushed rock and gravel surfacing and resurfacing 16 feet wide and 9 to 10 inches in compacted thickness.

Contract No. 1132, awarded October 30, 1929, to Joslin & McAllister, of Spokane, Washington. Work commenced December 17, 1929; completed August 23, 1930. Estimated cost, $127,000. Resident Engineer, E. G. Bickmore.

Surfacing being required on the newly graded Harper-Burrelle Ranch section, it was deemed advisable to resurface the Vale-Burrelle section in conjunction , as this section surfaced in 1921-22, was failing under the increased traffic. Preliminary to resurfacing, the roadbed was widened to a width of 26 feet.

On the 7.01 miles of resurfacing work an agreement was made with the contractor under date of May 2, 1930, requiring the furnishing and placing of 6,550 cubic yards of run of bank gravel in lieu of crushed gravel base resurfacing.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 7,867.31
Labor and materials furnished by state:		
Lease of stock pile site		20.00
Reconstruct irrigation flume		39.45
Digging drainage ditches		65.28
Sprinkling surfacing materials		8,768.10
Applying filler materials		59.00
Preparing stock pile sites		8.92
Contract items as follows:		
Common embankment, 11,097.8 cu. yds. at 60c	$ 6,658.68	
Intermediate embankment, 794 cu. yds. at 60c	476.40	
Common excavation, 1,628.9 cu. yds. at 60c	977.34	
Intermediate excavation, 567.4 cu. yds. at 60c	340.44	
Solid rock excavation, 1,154.8 cu. yds. at $1.00	1,154.80	
Overhaul, 9,900 yd. stas. at 2c	198.00	
Truck haul, 5,139.7 yd. mi. at 16c	822.35	
Class "A" concrete, 2.35 cu. yds. at $30.00	70.50	
Class "D" concrete, 12.68 cu. yds. at $30.00	379.80	
Cement rubble masonry, 25.63 cu. yds. at $10.00	256.30	
Metal reinforcement, 1,876 lbs. at 8c	150.08	
18-inch concrete pipe, 747 lin. ft. at $2.10	1,568.70	
24-inch concrete pipe, 36 lin. ft. at $3.00	108.00	
36-inch concrete pipe, 36 lin. ft. at $6.00	216.00	
12-inch corrugated iron pipe, 62 lin. ft. at $1.50	93.00	
18-inch corrugated iron pipe, 80 lin. ft. at $2.25	180.00	
24-inch corrugated iron pipe, 12 lin. ft. at $2.80	33.60	
36-inch corrugated iron pipe, 16 lin. ft. at $5.80	92.80	
Base course surfacing, 29,228 cu. yds. at $1.30	37,996.40	
Top course surfacing, 8,681 cu. yds. at $1.30	11,285.30	
Base course resurfacing, 9,770 cu. yds. at $1.30	12,701.00	
Top course resurfacing, 2,796 cu. yds. at $1.30	3,634.80	
Grade "A" maintenance materials, 5,037 cu. yds at 90c	4,533.30	
Grade "B" maintenance materials, 5,457.5 cu. yds. at 90c	4,911.75	
Hauling broken stone (pile measure), 13,824.6 yd. mi. at 30c	4,147.38	
Bank gravel, 6,550 cu. yds. at 40c	2,620.00	
Hauling bank gravel, 21,814 yd. mi. at 15c	3,272.10	
Stock pile rejections, 2,917.6 cu. yds. at 25c	729.40	
Filler, 17,023.5 cu. yds. at 30c	5,107.05	
Filler haul, 22,845.25 yd. mi. at 20c	4,569.05	
Total amount earned by contractor	$109,284.32	
Deduction for retained percentage	3,278.53	
Total amount paid to contractor		106,005.79
Total amount expended on project, all state funds, 1929-30		$122,833.85

Speery-R. R. Tunnel Grading

On the Central Oregon Highway from Sta. 842, which station is on the north side of Malheur River about 16.0 miles east of Juntura, to Sta. 1159, which station is on the south side of Malheur River about 13 miles west of Harper; 6.01 miles of grading.

Contract No. 1229, awarded September 25, 1930, to E. C. Peck & Co. of Drain, Oregon. Work commenced October, 1930. Estimated cost, $89,000 from state funds. Resident Engineer, E. G. Bickmore.

Continuing the improvemnt of the Central Oregon Highway westward and to make a connection with the present county road to Juntura, this six-mile grading section was put under contract in the fall of 1930, with completion anticipated in the spring of 1931.

The present county road to Juntura, a very narrow and difficult road to negotiate, follows the north bank of the Malheur River, whereas the highway follows the south bank from Harper to Speery. In order to connect with the county road it is necessary to complete the grading to Speery and construct a bridge across the Malheur River at that place. The contract for the bridge is expected to be awarded in time to allow its completion by the time the grading of this section is completed.

Harper-Burrelle Ranch Grading

On the Central Oregon Highway from Sta. 0+00 which station is on the south side of the Malheur River opposite from and about one-half mile south of the town of Harper to Sta. 819+75.5, which station is near the Burrelle Ranch about six miles west of Vale; 15.3 miles of grading, 22-foot roadbed.

Contract No. 1056, awarded December 19, 1928, to W. H. Puckett Co. of Boise, Idaho. Work commenced January 10, 1929; completed May 31, 1929. Final cost, $107,586.13. Resident Engineer, W. C. Williams.

The W. H. Puckett Company, General Contractors, moved on the job immediately after the contract was awarded, and rushed the work to an early completion. Work was carried on during the winter, a day and night crew being used throughout.

This section of highway extends from the west end of the previously constructed Vale-Burrelle Section, to Harper, a rapidly growing community situated on the Vale Reclamation Project, of which the Harper Unit was completed simultaneously with this section of highway. The completion of this section has been an important factor in the settlement of the Harper Unit of the Vale Reclamation Project.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 5,888.02
Prospecting for surfacing materials		3.60
Contract items as follows:		
Clearing and grubbing, all	$ 1,500.00	
Common excavation, 106,659.7 cu. yds. at 26c	27,731.52	
Intermediate excavation, 31,760.4 cu. yds. at 36c	11,433.74	
Solid rock excavation, 35,558.3 cu. yds. at 87½c	31,113.51	
Overhaul, 53,219 yd. stas. at 4c	2,128.76	
12-inch concrete pipe, 102 lin. ft. at $1.25	127.50	
18-inch concrete pipe, 1,800 lin. ft. at $2.25	4,050.00	
24-inch concrete pipe, 363 lin. ft. at $3.00	1,089.00	
36-inch concrete pipe, 324 lin. ft. at $5.00	1,620.00	
18-inch siphon pipe, 663 lin. ft. at $2.40	1,591.20	
24-inch siphon pipe, 147 lin. ft. at $3.20	470.40	
Cement rubble masonry, 127.7 cu. yds. at $14.00	1,787.80	
Riprap, 443.2 cu. yds. at $2.50	1,108.00	
Class "A" concrete, 55.68 cu. yds. at $30.00	1,670.40	
Class "B" concrete, 93.01 cu. yds. at $25.00	2,325.25	
Lumber and timber, 140.630 M-FBM at $70.00	9,844.10	
Timber piling, 766 lin. ft. at $1.50	1,149.00	
Timber piling (unused), 134 lin. ft. at 30c	40.20	
Force account items:		
Excavate quarry test pits	594.44	
Construct head gates and dividing boxes in irrigation ditches	182.86	
Raise bridge and grade	95.79	
Construct wooden covers for concrete siphon boxes	41.04	
Total amount paid to contractor		101,694.51
Grand total cost of project 1929-30, all state funds		$107,586.13

Tunnel-Harper Grading

On the Central Oregon Highway from Sta. 1159 which station is across the river opposite Tunnel No. 1 on the Burns Branch of the Union Pacific Railroad and is about 13 miles west of Harper, to Sta. 0+00 which station is about one-half mile south of Harper and connects with the west end of the Harper-Burrelle Ranch Section; 13.31 miles of grading 22-foot roadbed.

Contract No. 1172, awarded March 27, 1930, to J. A. Terteling & Sons of Moscow, Idaho. Work commenced April 4, 1930. Estimated cost, $178,000 from state funds. Expenditures to date, $36,823.52. Resident Engineer, E. G. Bickmore.

This section forms the third link to be constructed on the eastern end of the Central Oregon Highway. With the exception of a short distance across Harper Valley on the eastern end of the section, this project traverses a very sparsely settled and barren country, following the canyon of the Malheur River. The major importance of this construction is the shortening of the incompleted gap in the Central Oregon Highway between Burns and Vale, which prior to the present biennium has been in a very preliminary state of development.

Malheur River Bridge

On the Central Oregon Highway near Burrelle Ranch; two 24-foot, 9-inch concrete spans; two 100-foot pony truss steel spans, with 20-foot clear roadway.

Contract No. 1078, awarded March 8, 1929, to J. J. Badraun of Portland, Oregon. Work commenced March 25, 1929; completed July 31, 1929. Final cost, $30,317.12. Resident Engineer, Joseph A. Weber.

This structure was built on new alignment about one-half mile upstream from the old bridge which was a light 130-foot steel span bridge with narrow roadway. The old bridge was taken down by the county and reerected over the same stream at the crossing of the Little Valley Market Road.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,524.21
Name plates		23.50
Grading approaches		599.82
Contract items as follows:		
Excavation, 359.11 cu. yds. at $4.50	$ 1,616.00	
Excavation below elevation, 16.66 cu. yds. at $4.50	74.97	
Class “B” concrete, 132.66 cu. yds. at $24.00	3,183.84	
Class “A” concrete, 68.99 cu. yds. at $23.00	1,586.77	
Class “D” concrete, 161.6 cu. yds. at $20.00	3,232.00	
Metal reinforcement, 47,643 lbs. at 6c	2,858.58	
Structural steel, 210.915 lbs. at 7.3c	15,396.80	
Concrete handrail, 110 lin. ft. at $3.50	385.00	
Force account:		
Build addition to tool house for Resident Engineer's construction office	39.17	
Total amount earned by contractor	28,373.13	
Deduction for cement correction	203.54	
Total amount paid to contractor		28,169.59
Grand total cost of structure, 1929-30, all state funds		$ 30,317.12

Baker County Line-Ontario, Additional Right of Way

On the Old Oregon Trail from the boundary line between Baker and Malheur Counties, to the North City Limits of Ontario, including Weiser and Payette Spurs; 29.0 miles of extra right-of-way acquisition.

The original right-of-way on this section was inadequate for proper grade widening and other highway development. An additional strip of land is being acquired on each side of the highway, increasing the right-of-way to an average width of 80 feet.

Negotiations for the purchase are being handled by Resident Engineer J. B. Weaver. Expenditures to date consist of $1,710.20 from state funds.

Storage Building at Ontario

On the John Day Highway in the town of Ontario at the intersection of California and King Streets; 28 x 72-foot standard frame maintenance storage building.

Contract No. 1096, awarded May 23, 1929, to A. G. Plant Co. of Baker, Oregon. Work commenced June 17, 1929; completed August 10, 1929. Final cost, $4,724.83. Resident Engineer, M. Stephenson.

The Ontario Patrol Site, donated to the State by the city of Ontario, has been improved during the biennium by the construction of a frame storage building, and a galvanized woven wire fence constructed around the site.

Maintenance

A total of 137.52 miles of highways are under maintenance by state forces in Malheur County at the close of the year 1930. This mileage consists of 0.89 miles of concrete pavement, 8.44 miles of bituminous macadam, 85.87 miles of oil treated macadam, 31.68 miles of untreated macadam, and 10.64 miles of earth roads.

Maintenance patrol headquarters have been established at the Snake River Patrol House, Ontario, Harper, Jamieson and Ironside. In addition to the usual routine maintenance work necessary to properly maintain the highway, considerable minor betterment work has been performed by state forces. Probably the most important improvement under this classification has consisted of the grade raising of several sections between Ontario and Nyssa which had, by constant surface breakage, necessitated annual reoiling. These troublesome sections have been eliminated by the addition of approximately 12 inches of pit-run gravel topped with salvaged crushed gravel. The reoiling of these sections is included in the total of 12.87 miles of highways in Malheur County which have required reoiling during 1930, this small mileage of reoiling required indicating the increased success of oil treated roads in the county.

Prior to the year 1930, all oiling work in the county had been performed by state forces, but during the year 1930 all oiling and reoiling in Malheur County was contracted, the work being performed by J. C. Compton, contractor, of McMinnville, Oregon.

All maintenance work in the county during the biennium, has been under the supervision of J. N. Bishop and W. W. Stiffler, successive Resident Maintenance Engineers, located at Baker, and H. G. Smith, Division Engineer, with headquarters at La Grande.

During the biennium, expenditures for general maintenance in the county have amounted to $103,942.69 and for minor beterment work $28,175.19.

Snake River Slides-Ontario Survey

The early need of widening and resurfacing the portion of the Old Oregon Trail between the Snake River Slides and Ontario being apparent, a survey of the section was made during the winter of 1929-30 under the supervision of Resident Engineer H. J. Miller. The survey included the spur roads leading from the Old Oregon Trail to Weiser and Payette, Idaho.

The survey follows the original highway for the greater part of the distance, but a few changes were made to reduce sharp curves. A very decided improvement was obtained to the point known as "Pumping Plant Hill" where several serious accidents have occurred in past years.

Vale-Brogan Survey

The survey of the Vale-Jamieson section was revised to meet the requirement for Federal Aid, and extended to Brogan, 7.25 miles west of Jamieson. The survey was made during August and September, 1930, under supervision of Resident Engineer J. B. Weaver.

Further details will be found on page 391 of the 1927-28 report.

Juntura-Tunnel Survey

During the fall and winter of 1929, a location survey was made between Juntura and a point opposite Tunnel No. 1 on the Burns branch of the Union Pacific Railroad. This survey closes the gap between Juntura and the survey made between the tunnel and Harper in 1926.

The location follows the canyon of the Malheur River and has a very good grade line throughout. A good alignment also has been obtained, the maximum curvature being 16 per cent. It was necessary to cross the Malheur River three times in order to avoid conflict with the Burns Branch of the Union Pacific Railroad. At each crossing an underpass is provided at nominal cost by utilizing the present railroad bridge structures. In addition to the three crossings of the Malheur River, the location crosses the North Fork of the Malheur River about one mile east of Juntura.

The survey has been made under the supervision of Resident Engineers W. C. Williams and J. B. Weaver, successively. The length of line located is 23.3 miles. The portion of the survey between Speery and the railroad tunnel has been put under contract for grading.

MARION COUNTY

The State Highway System in Marion County comprises a total of 38.87 miles of which there are 29.40 miles of bituminous pavement and 9.47 miles of concrete pavement.

With the exception of non-skid treatment of the Pacific Highway from Salem to Aurora, and from Jefferson to Neal Creek, maintenance and betterment work in Marion County during the biennium just ending has been confined solely to the routine work of maintenance of roadbed surface and shoulders, drainage, etc., with the necessary amount of pavement repair which has been done by special crews. The non-skid treatment was done in a manner similar to the experimental work of 1927, as described on page 393 of the last report, material used being Gasco road binder No. 2 and crushed gravel screenings from the Willamette River at Salem for the southerly part of the section, and from a bed near Canby for the northerly part. These screenings were of a maximum size of five-eighths inch from the Salem source, and three-fourths inch from the Canby source, both of which have been found to be too fine, and later developments have shown that the use of coarser material produces not only more efficient but more permanent results, and for similar work in other places done during 1930, including the work between Jefferson and Neal Creek, material 1¼ inch with a top dressing of fine material has been used. It is very probable that the Salem-Aurora Section will require redressing within a few years.

Shop Building at Salem

Located at the Equipment Headquarters Plant near the east city limits of Salem; 48 x 264-foot frame storage building.

Contract No. 1129, awarded September 26, 1929, to F. L. Odom of Salem, Oregon. Work commenced October 1, 1929; completed November 9, 1929. Final cost, $5,109.24. Resident Engineer, G. S. Paxson.

The cost of this building will not appear in the report, except as shown in general shops account.

Platform and Storage Shed at Salem

Located at the Equipment Headquarters Plant near the east corporate limits of Salem; 48 x 76-foot storage shed with loading ramp at each end.

Contract No. 1194, awarded April 24, 1930, to A. J. Anderson of Salem, Oregon. Work commenced April 24, 1930; completed August 1, 1930. Final cost, $2,810.49. Resident Engineer, C. W. Bagnell.

Expenditures for the construction of this building are included in the general equipment and supplies holding account.

Maintenance

Maintenance work in Marion County north of Salem has been under the field direction of F. D. Eason, Resident Maintenance Engineer, with headquarters at McMinnville. South of Salem the work has been under the direction of A. A. Amort and I. A. DeFrance, successive Resident Maintenance Engineers, located at Corvallis.

The total expenditures in the county during the biennium for general maintenance and minor betterments, have been $41,532.54 and $26,357.55, respectively.

Mill City-Niagara Survey

At the request of the Marion County Court a location was made from Mill City to Niagara. This is an important section on the North Santiam Route from Salem to Bend. It was decided to eliminate all six of the existing railroad grade crossings and to straighten out the east approach to Mill City.

The survey was made by H. C. Broadwell, Locating Engineer, during the period from February 1, to April 24, 1930, and covered a total of 7.19 miles.

MORROW COUNTY

The grading and surfacing of all state highways within the limits of Morrow County were completed during the 1927-28 biennium, and only a small amount of minor betterment and oil treatment of gravel surface has been done during the 1929-30 biennium.

The Old Oregon Trail traversing the county along the north boundary, is surfaced with oil treated macadam and has required no work other than necessary maintenance during 1929-1930. The Oregon-Washington Highway, starting at the extreme northwest corner of the county near Heppner Junction, and swinging southward to Heppner, the county seat, and thence eastward towards Pendleton to the east boundary line of the county, consists of oiled macadam from Heppner Junction to a point about 6 miles east of Heppner, and untreated crushed rock macadam from that point to the east boundary line of the county. The six-mile section extending east from Heppner has been oiled during the current biennium, otherwise no new work has been done on the Oregon-Washington Highway.

H. G. Smith, Division Engineer with headquarters at La Grande, has had supervision over all highway work in Morrow County.

Jones Hill-Lena Surfacing

This project was completed during the previous biennium and a descriptive article will be found on page 394 of the 1927-28 report.

The only entry during the present biennium covers the final estimate payment of $525.86 to the contractor. The final cost of the project amounts to $12,873.27, of which the state expended $1,705.99 and the county expended $11,167.28.

Lena-Umatilla County Line Surfacing

This project was completed during the previous biennium and a descriptive article will be found on page 395 of that report.

The only entry during the present biennium is the payment of the final estimate to the contractor. This amounts to $1,037.16. The final cost of the project amounts to $53,784.36, of which $23,545.31 was expended from state funds and $30,239.05 from county funds.

Maintenance

There are 94.31 miles of state highways under maintenance in Morrow County, the maintenance work being performed by patrolmen stationed at Heppner and Boardman. The patrol-headquarters formerly located at Ione has been eliminated, and the work handled by this patrol has been absorbed by the Heppner and Boardman patrols.

The state highways under maintenance in Morrow County consist of 3.08 miles of bituminous macadam, and 26.15 miles of oil treated macadam on the Old Oregon Trail, and 44.32 miles of oil treated macadam and 20.76 miles of untreated macadam on the Oregon-Washington Highway.

No unusual difficulties have been encountered in the maintenance operations in this county, climatic conditions being very favorable for oil-treated macadam, and only a small amount of reoiling has been required annually. Heavy snow falls are experienced on the Franklin Hill section of the Oregon-Washington Highway, but erection and maintenance of snow fences at strategic points have materially reduced the work of snow removal on this section.

C. E. Carter, Resident Maintenance Engineer at Pendleton, has supervised maintenance work in the county, under the direction of H. G. Smith, Division Engineer, with headquarters at La Grande.

During the biennium there has been expended for general maintenance in the county, the amount of $65,890.55 and for minor betterment work, $6,716.71.

Jones Hill Resurfacing

This project was completed during the previous biennium, and a descriptive article will be found on page 398 of the report for that period.

The only entry during the present biennium is the final payment of $162.30 to the contractor. The final cost of the project has amounted to $1,242.90, all state funds.

MULTNOMAH COUNTY

For the first time Multnomah County appears in the report of the Highway Commission as a county containing state highways. The transfer of roads in Multnomah County and their designation as state highways was under discussion at the close of the last biennium, as referred to on page 398 of the report for 1927-28, and the first unit of state highway to be taken over by the State Highway Commission is the short section connecting the bridge on the Pacific Highway between Portland and Vancouver from the south end of the bridge to the junction of the Union Avenue and Denver Avenue approaches.

The transfer of its interest in the Interstate Bridge by Multnomah County, to the State Highway Commission and with it this short section of highway, was effected January 1, 1929. This was followed on March 1, 1930, by the transfer of the Columbia River Highway from East 82d Street via Sandy Boulevard and Troutdale to the Hood River County line. Both of these sections have since been under the jurisdiction of and maintained by the State Highway Commission, and it is expected that they will be followed by units of the connecting links of other state highways leading into Portland.

The division line between Divisions Nos. 1 and 4 has been set at Multnomah Falls on the Columbia River Highway, and all matters relating to state highways in Division No. 1 are under the supervision of W. D. Clarke, Division Engineer, with headquarters at Salem. That portion of the Columbia River Highway between Multnomah Falls and the Hood River County line is under the supervision of C. W. Wanzer, Division Engineer at Bend.

Maintenance

At the end of the biennium 39.56 miles of the State Highway System in Multnomah County were under state maintenance. All of this mileage is bituminous pavement.

Aside from the general patrol gang operations there are but two items of special interest relating to the maintenance and betterment of highways in Multnomah County during the time that these highways have been under the jurisdiction of the State Highway Commission.

Snow removal during the winter of 1929-30 presented a very serious difficulty. For ten days, in January, 1930, there existed a condition almost unprecedented in this section of the state when a light drifting snow driven by a continuous strong east wind kept many of the roads of Multnomah County blocked, despite the efforts of all the county's equipment, reinforced by two rotary snow plows and other equipment of the State Highway Commission which could be made available for the work. During the same time there occurred one of the so-called tapioca snowfalls in the Columbia River Gorge which, as in the case of previous storms of the same character, completely blocked the highway for a day or two, but which it was possible in this case to remove promptly with the service of three rotary snow plows which were available. The opening of the Columbia River Highway was made the first objective of all available state equipment, but as soon as that was accomplished as much of the equipment as could be spared from the requirements of state highways in neighboring counties was placed at the disposal of Multnomah County authorities for use on other county roads in and around Portland.

The second item is the extensive pavement repair work which has been done on the Columbia River Highway during the summer of 1930. The severe frosts of the previous winter caused a large number of breaks in the bituminous pavement which have been repaired and a general patching of the pavement, to restore the surface as nearly as practicable to its original shape, has been done in preparation for the application of a non-skid surface. Contract for production of the necessary crushed rock for this repair work and non-skid application was let early in the summer, with the expectation that the material could be furnished in time for the non-skid work during 1930. Because of the necessity of changing quarries, however, this was not accomplished, and the non-skid work has been deferred until 1931.

Field direction of state highway maintenance and betterment work west of Multnomah Falls has been under the direction of F. D. Eason, Resident Maintenance Engineer, with headquarters at McMinnville. East of Multnomah Falls the work has been under the supervision of K. D. Lytle and J. N. Bishop, successive Resident Maintenance Engineers at The Dalles.

During the biennium, total expenditures for general maintenance in the county have been $46,345.65.

Portland-Hood River Betterment Materials

On the Columbia River Highway, from mile point 12.9, which point is about 3 miles west of Troutdale, to mile point 65.37, which point is at the west corporate limits of the city of Hood River; 54.12 miles of furnishing and stock piling 40,000 cubic yards of materials to be used in maintenance and betterment operations.

Contract No. 1155 was awarded March 12, 1930, to Knute Lien of La Grande, Oregon. Work commenced March 15, 1930. Estimated cost, $82,000 from state funds. Expenditures to date, $41,531.96. Resident Engineer, C. C. Slavens.

The rock being produced under this contract is to be used for the purpose of patching the asphaltic concrete pavement on this section of highway and likewise to construct a non-skid wearing surface thereon. It is estimated that the contractor will complete the work by December 31, 1930.

POLK COUNTY

As the original construction of the State Highway System in Polk County was completed prior to the beginning of the biennium, no work of that nature has occurred during this two-year period. All state highway work in the county has been of a betterment nature and the major activities of this have consisted of constructing a non-skid surface on the Salem-Dallas Highway, the Monmouth-Independence Highway and the bithulithic paved section of the West Side Pacific Highway, from the Yamhill County line to the Benton County line and the shoulder widening of the Clow Corner-Monmouth section of this latter highway.

However, the surfacing of the Grand Ronde-Tillamook County line section of the Salmon River Highway, a new construction project, was done during the biennium under the supervision of the State Highway Commission. This highway being a part of the Federal Aid System, though not a state highway, is, accordingly, subject to cooperation from Federal Aid funds and government cooperation having been requested on the work undertaken, it was necessary, in compliance with government regulations, that the State Highway Commission supervise the construction of the project and all expenditures which were incurred. Local cooperation for this work was provided from the Salmon River Highway Improvement District funds.

All matters relating to the state highway work on the Salem-Dallas Highway, the McMinnville-Tillamook Highway and the West Side Highway north of Rickreall have been under the direction of W. D. Clarke, Division Engineer, with headquarters at Salem, Oregon. All work on the West Side Highway south of Rickreall and the Monmouth-Independence Highway has been under the direction of J. S. Sawyer and E. A. Collier, successive Division Engineers, with headquarters at Salem.

Tillamook County Line-Grand Ronde Surfacing

Federal Aid Project No. 159-A

On the Salmon River Highway, from Sta. 431+80, which station is at the Tillamook-Polk County line, 6.4 miles west of the town of Grand Ronde, east to Sta. 96+50, which station is in the town of Grand Ronde; 6.39 miles of crushed gravel surfacing.

Contract No. 1133, awarded February 19, 1930, to J. H. Gallagher of Portland, Oregon. Work commenced May 11, 1930; completed October 31, 1930. Estimated cost, $37,000; consisting of $14,227.40 from district funds, and $22,772.60 from government funds. Expenditures to date have amounted to $23,615.55. Resident Engineer, B. O. Johnson.

The Grand Ronde-Tillamook County line section of the Salmon River Highway was graded in 1927 by the Grand Ronde-Salmon River Highway Improvement District, with funds derived from a bond issue. This grading work, a description of which is to be found on page 402 of the last biennial report, consumed practically all of the district's available funds and left it without the means for completing the section with resurfacing. The Salmon River Highway having been later designated as a portion of the Federal Aid Post Road System, thereby becoming entitled to Federal cooperation to the extent of 62.23 per cent, the district was able to finance the remainder of the cost for surfacing and a contract for such surfacing was awarded in February, 1930. This surfacing is of crushed gravel, 2-inch crusher run base and 1-inch crusher run top, material being obtained from boulder gravel deposits along the banks of Rock Creek about one mile west of New Grand Ronde. The surfacing is 18 feet in width and 8 inches, loose measure, in thickness. The contract also included some regrading work made necessary by the settlement of some of the larger fills and by slides in some of the cuts. No line changes nor grade changes, nor widening of the roadbed was undertaken. The work has been finished during the 1930 season.

Valley Junction Section Grading and Surfacing

On the McMinnville-Tillamook Highway from Mile Post 25.05, approximately 540 feet west of the crossing of the Willamina and Grand Ronde Railroad near Valley Junction, east to Mile Point 25.79, approximately one-half mile east of Valley Junction; 0.74 mile of grading and broken stone surfacing.

Contract No. 1043, awarded May 29, 1928, to Frank M. Bullis of Corvallis, Oregon. Work commenced June 12, 1928. Completed September 2, 1928. Final cost, $15,481.63. Resident Engineer, B. O. Johnson.

Further details will be found on page 399 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 949.90
Purchase of extra right of way		1,972.55
Moving buildings		1,610.95
Placing riprap		183.23
Maintaining completed portions of roadbed		18.32
Hauling and constructing surfacing		953.71
Sprinkling surfacing material		701.88
Preparing stock pile sites		66.78
Grading and preparing subgrade		160.17
Moving right of way fence		112.00
Building breakwaters		284.52
Contract items as follows:		
Clearing and grubbing, all	$ 25.00	
Common excavation, 11,817.8 cu. yds. at 36c	4,254.41	
Overhaul, 4,106 yd. stas. at 5c	205.30	
Truck haul, 5,546.2 yd. mi. at 20c	1,109.24	
12-inch concrete pipe, 102 lin. ft. at 90c	91.80	
18-inch concrete pipe, 45 lin. ft. at $1.95	87.75	
24-inch concrete pipe, 12 lin. ft. at $2.85	34.20	
Surfacing materials in place, 3,007 cu. yds. at 75c	2,255.25	
Clay filler, 520 cu. yds. at 45c	234.00	
Filler haul, 520 yd. mi. at 25c	130.00	
Force account as follows:		
Removing 12-inch pipe under cross-roads	4.72	
Removing old approaches for fill	13.85	
Removing and replacing 200 lin. ft. fence for borrow	14.44	
Removing oversize rock from surfacing	7.66	
Total amount paid to contractor		8,467.62
Grand total cost of project, all state funds		$ 15,481.63

SEGREGATION OF FUNDS

Expended 1927-28 biennium	$ 14,879.56
Expended 1929-30 biennium	602.07
Total of expenditures	$ 15,481.63

Unit No. 3, Willamette Valley Rock Production Project

On the Salem-Dallas, West Side and Monmouth-Independence Highways; furnishing crushed gravel for use in connection with betterment operation. Sizes of rock 1¼-inch-¾ inch and ¾-inch-¼ inch.

Contract No. 1165, awarded March 27, 1930, to the Oregon Gravel Company of Salem, Oregon. Work commenced April 21, 1930; completed August 6, 1930. Final cost, $16,707.16. Resident Engineers, F. D. Eason and I. A. DeFrance.

This contract covers the furnishing of crushed gravel and screenings for the construction of non-skid surface on the bitulithic pavements of the Salem-Dallas and West Side Pacific and Monmouth-Independence Highways in Polk County.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 876.29
Labor and materials furnished by state:		
Lease and preparation of stock pile sites		76.78
Constructing approach roads		67.14
Credit for materials used to repair streets in city of Dallas Cr.		245.10
Contract items as follows:		
Crushed gravel (Salem-Dallas) 5,718 cu. yds. at $1.50	$ 8,577.00	
Truck haul, 39,693 yd. mi. at 11c	4,366.23	
Crushed gravel (Monmouth-Independence), 1,494.4 cu. yds. at $2.00	2,988.82	
Total amount paid to contractor		15,932.05
Grand total cost of project, all state funds, 1929-30		$ 16,707.16

Holmes Gap Section Bituminous Macadam

On the West Side Pacific Highway from south end of asphaltic concrete pavement to north end of cement concrete pavement at Holmes Gap; 0.39 mile of bituminous macadam 3½ inches in thickness and 18 feet in width. Work performed by state oiling crew under Foreman O. C. Yocum during August, 1930.

Estimated cost, $2,250 from state funds. Total expended to date, $305.32. Resident Engineer, F. D. Eason.

Yamhill County Line-Holmes Gap Non-skid Surfacing

On the West Side Pacific Highway from Yamhill County line at Mile Point 48.62 to the north end of the cement-concrete pavement at Mile Point 51.71, and from the south end of the cement-concrete pavement at Mile Point 52.45 to Mile Point 53.68 at the south end of the asphaltic-concrete pavement at Holmes Gap; 4.32 miles of non-skid surface treatment of asphaltic-concrete pavement. Work performed during August, 1930, by the state oiling crew under Foreman O. C. Yocum. Rock materials were furnished under Unit 4 of the Willamette Valley Rock Production Project.

Estimated cost, $6,200. Expended to date, $3,855.03 from state funds. Resident Engineer, F. D. Eason.

Rickreall-Monmouth Non-skid Surfacing

On the West Side Pacific Highway from the south end of the non-skid placed in 1929 at Mile Point 60.66 to the north end of wide pavement in the town of Monmouth at Mile Point 64.62; 3.98 miles of non-skid surface treatment of asphaltic concrete pavement. Work performed during August, 1930, by the state oiling crew under Foreman O. C. Yocum. The rock for this work was stockpiled under Unit 3 of the Willamette Valley Rock Production Contract.

Expenditures to date have amounted to $2,123.77. Resident Engineer, I. A. DeFrance.

Monmouth-Independence Non-skid Surfacing

On the Monmouth-Independence Highway from the east city limits of Monmouth to west city limits of Independence; 1.43 miles of non-skid surface treatment of the asphaltic concrete pavement. Work performed by state oiling crew under Foreman O. C. Yocum during August, 1930. Rock for this work was stockpiled under Unit 3 of the Willamette Valley Rock Production Contract.

Estimated cost, $1,300. Expended to date, $743.33 from state funds. Resident Engineer, I. D. DeFrance.

Salem-Dallas Non-Skid Surfacing

On the Salem-Dallas Highway from Mile Point 0.52 at the railroad crossing east of Dallas to Mile Point 14.44, at the west end of the trestle approach to Willamette River bridge at Salem; 13.92 miles of non-skid surface treatment of asphaltic concrete pavement. Work done by state crew under Foreman O. C. Yocum during August, 1930. Resident Engineer, F. D. Eason.

Expenditures to date have amounted to $12,541.97 from state funds. This expenditure does not include the cost of rock used in the work. The rock was stockpiled under Unit 3 of the Willamette Valley Rock Production Contract.

Valley Junction Section Bituminous Macadam

On the McMinnville-Tillamook Highway from the junction with the Salmon River Road at Mile Point 25.33 to the Yamhill River Bridge at Mile Point 25.98; .65 miles of bituminous macadam, 2 inches thick and 18 feet wide. Work performed in August by state oiling crew under Foreman D. Cooper.

Estimated cost, $1,600 from state funds. Total expended to date, $720.33. Resident Engineer, G. S. Bray.

Clow Corner-Monmouth Roadbed Widening

Federal Aid Project No. 162-A

On the West Side Pacific Highway from Sta. 858+00, which station is at Clow Corner, about 2.5 miles south of Rickreall, south to Sta. 1006+00, which station is at the north corporate limit of the city of Monmouth. 2.80 miles of roadbed widening and gravel shoulder construction.

Contract No. 1214, awarded July 24, 1930, to Earl L. McNutt of Eugene, Oregon. Work commenced August 1, 1930; estimated cost, $23,000, consisting of $9,288.87 from state funds and $13,711.13 from government funds. Expenditures to date, $6,307.66 from state funds. Resident Engineer, I. A. DeFrance.

The narrow shoulders and deep borrow pits and drainage ditches along this section have created a serious hazard to traffic and to improve this condition a contract was awarded for the construction of 13-foot earth shoulders on each side of the existing pavement and the surfacing of the shoulders with gravel 12 inches deep at the edge of the pavement, tapering to a depth of 6 inches at a point 10 feet out.

The contractor is making very good progress on this work and, it is anticipated, will finish during October, 1930. Gravel for the surfacing is being secured from Rickreall Creek.

Ash Creek Bridge

On the West Side Pacific Highway just north of Monmouth; one 20-foot concrete span, with 27-foot clear roadway.

Contract No. 1023, awarded November 29, 1927, to O. N. Pierce Company of Portland, Oregon. Work commenced August 7, 1928; completed October 31, 1928. Final cost, $2,810.58. Resident Engineer, J. T. Skelton.

This structure was completed in the preceding biennium but final settlement not made until this biennium. Further details will be found on page 402 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 153.38
Bench mark and traffic signs		6.09
Contract items as follows:		
Excavation, 103.7 cu. yds. at $2.00	$ 207.40	
Class "A" concrete, 74.67 cu. yds. at $25.00	1,871.75	
Reinforcing steel, 6,863 lbs. at 6c	411.78	
Removal of old bridge and maintenance of traffic, all	200.00	
Cement correction, 6.25 bbls. at $3.13	19.56	
Force account, rebuilding parapet walls and copings	40.62	
Total amount earned by contractor	$ 2,751.11	
Deduction account of being awarded contract for Luckiamute River bridge	100.00	
Total amount paid contractor		2,651.11
Grand total cost of structure, all state funds		$ 2,810.58

SEGREGATION OF FUNDS

Expended 1927-28 biennium	$ 2,409.68
Expended 1929-30 biennium	400.90
Total of expenditures	$ 2,810.58

Luckiamute River Bridge

Federal Aid Project No. 57

On the West Side Pacific Highway at Helmick station; one 100-foot steel pony truss span and five 40-foot concrete spans with 24-foot clear roadway.

Contract No. 1022, awarded November 29, 1927, to O. N. Pierce Company of Portland, Oregon. Work commenced January 18, 1928; completed October 31, 1928. Final cost, $38,497.01. Resident Engineer, J. T. Skelton.

This bridge was completed in the preceding biennium but final settlement was not. Final details will be found on page 402 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 2,488.07
Constructing guard fence		71.78
Bronze name plates		26.01
Traffic signs, watchmen and provisions for traffic control		563.95
Constructing embankment approaches		443.14
Contract items as follows:		
Excavation, 739.4 cu. yds. at $2.50	$ 1,848.50	
Excavation below elevation shown, 122.2 cu. yds. at $4.00	488.80	
Fir piling, 607.3 lin. ft. at 40c	242.92	
Class "B" concrete, 193.65 cu. yds. at $20.00	3,873.00	
Class "A" concrete, 256.93 cu. yds. at $20.00	5,138.60	
Class "D" concrete, 203.92 cu. yds. at $20.00	4,078.40	
Metal reinforcement, 119,788 lbs. at 4c	4,791.52	
Structural steel, 123,422 lbs. at 6½c	8,022.43	
Concrete handrail, 410.6 lin. ft. at $5.00	2,053.00	
Removal of old bridge and maintenance of traffic, all	2,500.00	
Force account items:		
Building job office for state use	21.39	
Furnish and place copper water stop over piers No. 1 & No. 2	32.54	
Place stiffener on end posts of steel hand rail	13.89	
Rebuild detour at south end of bridge	96.27	
Special adjustments as follows:		
Expense incurred by changes in footing design	1,433.90	
Expense incurred by failure of old detour bridge	303.48	
Total amount earned by contractor	$ 34,938.64	
Deduction for cement adjustment	34.58	
Total amount paid to contractor		34,904.06
Grand total cost of structure		$ 38,497.01

PARTICIPATION IN COST

	State	Government	Total
Expended 1927-28 biennium	$ 20,878.65	$ 11,440.80	$ 32,319.45
Expended 1929-30 biennium	Cr. 4,927.56	11,105.12	6,177.56
Total of expenditures	$ 15,951.09	$ 22,545.92	$ 38,497.01

Culvert West of Willamina

On the McMinnville-Tillamook Highway 1.6 miles west of Willamina; 4 x 4 x 68-foot concrete box culvert under 11-foot fill with 36-foot roadway.

Work commenced June 15, 1929; completed July 15, 1929. Final cost, $1,323.40. Resident Engineer, E. G. Ricketts.

This culvert replaces an obsolete wooden bridge with narrow roadway and was constructed by state forces under the direction of E. G. Ricketts.

Maintenance

At the close of the present biennium there were 48.84 miles of state highways under maintenance in Polk County, consisting of 26.49 miles of bituminous pavement, 14.71 miles of concrete pavement, 6.34 miles of bituminous macadam and 1.30 miles of oiled macadam.

Maintenance work performed in Polk County during the two-year period has consisted of repair work on paved and bituminous macadam sections and routine maintenance of shoulders, drainage and roadbed. Work of a betterment nature which has been undertaken during the period has consisted of non-skid treatment on the Monmouth-Independence Highway, the Salem-Dallas Highway and the bitulithic section of the West Side Pacific Highway from the Yamhill County line to the Benton County line. Also on the West Side Pacific Highway a bituminous macadam surface was constructed on the Holmes Gap Section and a shoulder widening project was placed under contract on the Clow Corner-Monmouth Section.

Maintenance operations on the Salem-Dallas Highway, the McMinnville-Tillamook Highway and the West Side Pacific Highway north of Rickreall, have been carried on under the field direction of F. D. Eason, Resident Maintenance Engineer, with headquarters at McMinnville. The work on the Monmouth-Independence Highway and on the West Side Highway south of Rickreall has been under the direction of A. A. Amort and I. A. DeFrance, successive Resident Maintenance Engineers with headquarters at Corvallis.

The total amount expended during the biennium for general maintenance in the county has been $48,612.27, and for minor betterment work, $34,844.54.

Willamina-Yamhill County Line Survey

In connection with construction of a concrete box culvert to replace a small wooden truss span about two miles west of Willamina on the McMinnville-Tillamook Highway, a slight realignment of the road was made. The survey for this revision was done in 1929 under the direction of Geo. S. Gray, Resident Engineer. The survey involved about one mile of revision.

SHERMAN COUNTY

During the biennium considerable highway work was done in this county on both the Sherman Highway and the Columbia River Highway. The work done on the former consisted of the widening, resurfacing and the laying of a bituminous macadam from DeMoss Springs to a point two miles south of Grass Valley. On the Columbia River Highway, crushed rock was produced and stock piled for a bituminous macadam. Surveys were also made for a widening project on this highway from the Deschutes River to the John Day River.

Considerable state force work of a betterment nature, was completed during the past two-year period. On the Sherman Highway, additional culverts were installed to take care of flood conditions, the road was widened from a point two miles south of Grass Valley to Kent and subgrade failures north of Wasco, caused by frost action, were corrected by addition of a heavy talus sub-base. On the Columbia River Highway, several large talus slides were removed.

All work in this county has been under the direction of C. W. Wanzer, Division Engineer, with headquarters at Bend.

De Moss Springs-Grass Valley Widening and Draining

On the Sherman Highway, from Mile Point 15.3, which point is near De Moss Springs to Mile Point 31.2 which point is about 25 miles south of Grass Valley; 15.9 miles of roadbed widening and drainage, the roadbed being widened to a minimum width of 28 feet.

Work commenced March 1, 1929; completed December 1, 1929. Final cost $31,362.41 from state funds. Resident Engineer, K. D. Lytle.

Prior to resurfacing this section, it was deemed advisable to correct faulty drainage conditions and to widen the roadway. The work was performed by state forces, using a team outfit, a power shovel and trucks. Where only a short haul of materials was necessary, the work was done with the team outfit, but whenever it was required to haul the materials a greater distance than 500 feet, the power shovel and trucks were employed. The roadway was widened to a minimum width of 28 feet and sags in the grade, due to settlement of fills, were eliminated by the placing of additional materials at those points. Drainage work consisted of reconstructing the side ditches through cuts to a minimum depth of 2.5 feet, placing of additional culvert pipes where necessary and lengthening those previously installed. One line revision was made, which consisted of replacing a 40 degree curve with a 10 degree. This change resulted in a greatly improved alignment at that point.

De Moss Springs-Grass Valley Surfacing

Federal Aid Project No. 152-A

On the Sherman Highway from Mile Point 15.3, which point is near De Moss Springs to Mile Point 31.2 which point is about 25 miles south of the town of Grass Valley; 15.9 miles of resurfacing and the furnishing of 7,800 cubic yards of maintenance materials.

Contract No. 1075 was awarded March 8, 1929, to Knute Lien of La Grande, Oregon. Work commenced March 26, 1929; completed April 1, 1930. Final cost, $78,209.60. Resident Engineer, K. D. Lytle.

[SHERMAN]

This contract, as awarded, provided for the resurfacing of the Sherman Highway from mile points 14.8 to 31.2. However 0.5 of a mile was eliminated from the south end, it being deemed advisable to make a line change on the section before the expense of resurfacing was incurred. Likewise, the section from mile points 18.2 to 18.5, through the town of Moro, was not resurfaced on account of objections raised by the city officials to having the street torn up. On this section, however, extra rock was provided in stock piles, it being planned that a heavy bituminous macadam could be constructed when the balance of the road was oiled.

The progress and workmanship of the resurfacing was very satisfactory, but considerable difficulty was encountered in securing clean maintenance material. This feature was especially bad at the Moro quarry and the contractor was forced to rescreen approximately 3,000 cubic yards of the material produced from that source.

The contractor used the Grass Valley Quarry as specified in the contract but chose another location from the one specified at Moro. Both quarries used in the project were purchased by the state and are now state-owned property.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 4,023.39
Rental of state equipment deducted from contractor's estimate		479.45
Signs for traffic control deducted from contractor's estimate		41.21
Labor and materials furnished by the state:		
Purchase of quarry sites		888.00
Lease and preparation of stock pile sites		98.06
Sprinkling surfacing materials		5,277.57
Hauling and placing filler materials		295.69
Rolling surfacing materials		1,958.52
Contract items as follows:		
Sub-base course resurfacing, 22,203.1 cu. yds. at $1.02	$ 22,647.16	
Base course resurfacing, 5,243 cu. yds. at $1.02	5,347.86	
Top course resurfacing, 1,280 cu. yds. at $1.02	1,305.60	
Extra resurfacing, 4,676.9 cu. yds. at 95c	4,443.06	
Grade "A" materials in stock pile, 3,577.8 cu. yds. at $1.02	3,649.36	
Grade "B" materials in stock pile, 1,637.9 cu. yds. at $1.02	1,670.66	
Grade "C" materials in stock pile, 3,609.7 cu. yds. at $1.02	3,681.89	
Top course resurfacing in stock pile, 2,373.9 cu. yds. at $1.02	2,421.38	
Sub-base for bituminous macadam, 237.4 cu. yds. at $1.02	242.15	
1½-inch to ¾-inch materials in stock pile, 142.5 cu. yds. at $1.02	145.35	
¾-inch minus materials in stock pile, 325.5 cu. yds. at $1.02	332.01	
Grade "A" materials in trucks, 16 cu. yds. at $1.02	16.32	
Grade "B" materials in trucks, 66 cu. yds. at $1.02	67.32	
Sub-base materials for shoulder drain, 492 cu. yds. at $1.02	501.84	
Earth filler, 516 cu. yds. at 25c	129.00	
Filler haul, 1,544 yd. mi. at 18c	277.92	
Hauling broken stone, pile measure, 14,403.44 yd. mi. at 18c	2,592.62	
Hauling broken stone, truck measure, 87,956 yd. mi. at 18c	15,832.08	
Hauling waste screenings, 2,026.62 yd. mi. at 18c	364.79	
Total amount earned by contractor	$ 65,668.37	
Deductions:		
Rental of state-owned equipment	479.45	
Signs for traffic control	41.21	
Total amount paid to contractor		65,147.71
Grand total cost of project, 1929-30		$ 78,209.60

PARTICIPATION IN COST

	State	Government	Total
Total of expenditures	$ 51,711.16	$ 26,498.44	$ 78,209.60
Estimated cost to complete	Cr. 12,619.71	12,619.71	
Estimated total costs	$ 39,091.45	$ 39,118.15	$ 78,209.60

Maintenance

There are under maintenance in this county 63.93 miles of state highways, consisting of 15.85 miles of bituminous macadam and 48.08 miles of oiled macadam.

The maintenance of the Columbia River Highway in this county, is costly due to many slides and to the thinness of the surfacing, which necessitates a large amount of extra gang work. Each year it is necessary to have a portable paving plant repair the surfacing.

In 1929 portions of the Sherman Highway were reoiled between Moro and Grass Valley. An application of heavy oil was put on from Grass Valley to a point two miles south of Kent and from this latter point to the Wasco County line a light application of tar was applied to the roadbed.

Besides the above, the ordinary maintenance operations, such as ditch cleaning, patching roadway, cleaning up of the right-of-way and the removal of snow have been carried on throughout each year.

Maintenance operations were under the supervision of K. D. Lytle, Resident Maintenance Engineer, with headquarters at The Dalles up until March, 1930. Subsequent to that time, J. N. Bishop, Resident Maintenance Engineer, with headquarters at the same place, has handled the work.

Total expenditures in the county for general maintenance and minor betterment work, during the biennium, have amounted to $68,231.99 and $21,560.51 respectively.

The Dalles-John Day River Maintenance Materials

Federal Aid Project Nos. 25 and 37

On the Columbia River Highway, from Mile Point 92.02, which point is at the east corporate boundary of The Dalles to the west end of the bridge over the John Day River; furnishing 50,000 cubic yards of maintenance and betterment materials.

Contract No. 1064 was awarded January 29, 1929, to H. E. Schmeer of Portland, Oregon. Work commenced February 25, 1929; completed September 1, 1930. Estimated cost $84,000, consisting of $48,828.85 from state funds and $35,171.15 from government funds. Expenditures to date consist of $75,571.44 from state funds. Resident Engineers, K. D. Lytle and C. C. Slavens, successively.

The rock furnished under this contract is to be used for bituminous macadam wearing surface construction and for general maintenance purposes. The contract called for approximately 45,000 cubic yards of crushed rock delivered in stock-piles, but this quantity, by special agreement with the contractor, was increased to 50,000 cubic yards.

The three quarries used on this project at Mile Point 92.8, Mile Point 108 and Mile Point 117.6 were purchased by the State and furnished free of cost to the contractor.

Dillon-Quinton and Wasco-Biggs Maintenance Materials

This project was completed in 1927 and a descriptive article will be found on page 408 of the 1927-28 report. The only expenditure during the past biennium was a delayed charge of $408.30 in the payment of royalty on gravel. The total cost of the project has amounted to $20,926.83 from state funds.

Moro-Kent Maintenance Materials

This project was completed in 1928 and a descriptive article will be found on page 409 of the 1927-28 report. The account was opened in the past biennium only to record the expenditure of $68.61 for delayed engineering charges and the final payment of $3,713.20 to the contractor. The total cost of the project now amounts to $30,151.54 from state funds.

Biggs-Blalock Survey

This survey is for widening the roadway between Biggs and Blalock preparatory to the laying of bituminous macadam pavement. A considerable number of minor changes both in alignment and grade are anticipated.

The survey was begun in July, 1930, under the direction of J. N. Bishop, Resident Maintenance Engineer, The Dalles, Oregon, and will involve an approximate total of 20 miles of revision and roadbed widening.

Kent-Wasco County Line Survey

The Kent-Wasco County line section is the only portion of the Sherman Highway south of De Moss Springs in Sherman County that has not been graded to a 22-foot roadbed width.

Under the direction of Resident Engineer Forrest Cooper, a survey was made in September, 1930, for the purpose of widening and securing better drainage on this section before the section was resurfaced. The survey involved about two miles of revised line.

TILLAMOOK COUNTY

The last uncompleted link in the State Highway System of Tillamook County is the section between Kilchis River and Wilson River. Over this section a new route for the highway has been adopted, as described in another section of this report covering the Tillamook-Kilchis River survey. Actual construction of the highway between Kilchis River and Wilson River, combined with a betterment project between Wilson River and Tillamook City has been begun by the award of a contract for the construction of the six bridge structures which are involved. These comprise bridges over Hoquarton, Hall and Dougherty sloughs, and Wilson River, a relief opening near Wilson River and an overhead crossing structure over the Southern Pacific track about a half mile south of Kilchis River. Cooperation on the project is being made by the City of Tillamook to the extent of $15,000 toward the purchase of necessary rights of way within the city limits and by Tillamook County to the amount of the entire right of way cost between Kilchis River and Wilson River. Contract for grading of the section will be let as soon as the overhead crossing structure is completed, this postponement of that part of the work being necessary because a large amount of the material for the embankment approach to the overhead structure from the south must necessarily come from excavations north of the structure.

Betterment projects, including the widening and resurfacing of the Moore cut-off section and the Neskowin-Otis section constitute the other items of major importance in state highway construction work in the county. The reconnaissance survey of the so called short road to the coast, as described in the section of this report relating to Washington County, is an item of particular interest to Tillamook County in the way of development and enlargement of the State Highway System.

All state highway work in the county and all matters relating to the location, construction and operation of highways are under the supervision of W. D. Clarke, Division Engineer, with headquarters at Salem.

Garibaldi-Hobsonville Surfacing

Federal Aid Project No. 129-C

On the Roosevelt Coast Highway, from Mile Point 65.81, at Sta. 547+00, which station is approximately one-half mile north of Garibaldi, south to Mile Point 69.04, at Sta. 365+00, which station is approximately one and eight-tenths miles north of Bay City; 3.45 miles of crushed gravel surfacing layed in three courses.

Contract No. 981, awarded June 23, 1927, to Harness and Colby, of Roseburg, Oregon. Work commenced July 26, 1927. Completed October 27, 1927. Final cost, $20,900.60. Resident Engineer, A. J. Olsen.

This project was opened the past biennium only to record the receipt of $9,794.84 from the government. The total expenditures to date have amounted to $5,105.76 from state funds, $6,000 from county funds, and $9,794.84 from government funds.

Further details will be found on page 413 of the 1927-28 report.

Mohler-Wheeler Bituminous Macadam

On the Roosevelt Coast Highway, from the South Fork of the Nehalem River at Mile Point 51.07 to the Wheeler overcrossing at Mile Point 52.46; 1.39 miles of bituminous macadam, 2 inches thick and 18 feet wide. This work was performed by state oiling crew under Foreman D. Cooper, during June, 1930.

Expenditures to date have amounted to $4,608.44. Resident Engineer, G. S. Gray.

Wheeler-Brighton Bituminous Macadam

On the Roosevelt Coast Highway, from Mile Point 53.96 at the south edge of Wheeler to Mile Point 56.57 at Brighton; 2.61 miles of bituminous macadam, 18 feet in width and varying in thickness from 1⅝ inches to 2⅞ inches. Work done by state oiling crew under Foreman D. Cooper during June, 1930. Final cost, $10,954.29 from state funds. Resident Engineer, G. S. Gray.

Brighton-Rockaway Bituminous Macadam

On the Roosevelt Coast Highway on intermittent sections between Brighton and Rockaway; 3.1 miles of bituminous macadam 18 feet in width, of which 2.02 miles were constructed 1⅝ inches thick and 1.08 miles were constructed 2⅞ inches thick. In addition to the above, a total of 1.8 miles of reoil treatment was laid on sections where rock was not available for bituminous macadam construction.

This work was performed during July, 1930, by state oiling crew under Foreman D. Cooper. Expenditures to date have amounted to $10,883.58 from state funds. Resident Engineer, G. S. Gray.

Hebo-Cloverdale Bituminous Macadam

On the Roosevelt Coast Highway, from Mile Point 98.30 at Hebo to Mile Point 101.35 at Cloverdale. 3.05 miles of bituminous macadam 2½ inches thick and 18 feet wide. Work done during August, 1930, by state oiling crew under Foreman D. B. Cooper.

Final cost, excluding stone, $10,208.57. Cost of broken stone taken from stock-piles, $5,688.55. Resident Engineer, G. S. Gray.

The following unit costs are given in connection with this work:

Cost per mile without stone	$3,347.00
Cost per square yard without stone	0.32
Cost per mile with stone included	5,212.00
Cost per square yard with stone included	0.49

Mohler-Garibaldi Surfacing

Federal Aid Project No. 129-D

On the Roosevelt Coast Highway, in two units. The north unit extends from Sta. 1416+00, which station is 400 feet north of the bridge over the south fork of the Nehalem River at Mohler, south to Sta. 1002, at Brighton, and is 5.68 miles in length. The south unit extends from Sta 765+60 at Rockaway, south to Sta. 547+00 near Garibaldi, and is 4.14 miles in length. The distance between the two units is 4.18 miles; 9.82 miles of macadam surfacing 18 feet wide and 10 inches in depth.

[TILLAMOOK]

Contract No. 987, awarded July 28, 1927, to Newport Construction Co., of Portland, Oregon. Work commenced August 17, 1927; completed February 14, 1929. Final cost, $162,634.19. Resident Engineers, A. J. Olsen and B. O. Johnson, successively.

For a detailed description of this project see pages 412-13 of the Biennial report of 1927-28.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 6,257.86
Royalty on gravel and filler material		2,611.04
Lease of stock pile sites		78.00
Furnishing and delivering emergency gravel		4,811.80
Constructing guard fence		26.60
Maintenance of completed portion of roadway		583.67
Widening roadbed and extending culverts		1,621.30
Constructing temporary surfacing		31.48
Sprinkling surfacing		475.62
Preparing stock pile sites		446.46
Signs for traffic control		32.32
Removing slides, raising sunken fills, etc.		814.84
Contract items as follows:		
Sub-base course surfacing, 17,527 cu. yds. at $2.40	$ 42,064.80	
Base course surfacing, 12,406 cu. yds. at $2.40	29,774.40	
Top course surfacing, 7,844 cu. yds. at $2.40	18,825.60	
Base course maintenance materials, 592 cu. yds. at $2.40	1,420.80	
Top course maintenance materials, 3,503 cu. yds. at $2.40	8,407.20	
Clay filler, 6,338 cu. yds. at 30c	1,901.40	
Filler haul, 11,715.5 yd. mi. at 20c	2,343.10	
Shoulder screenings, 207 cu. yds. at $1.00	207.00	
Riprap, 213 cu. yds. at $2.00	426.00	
Rock backfill, 172 cu. yds. at $2.50	430.00	
Stripping filler pits, 1,420.9 cu. yds. at 30c	426.27	
Earth shoulders, 3,845 cu. yds. at 75c	2,883.75	
Spreading emergency gravel, 926 cu. yds. at 5c	46.30	
2-inch maintenance materials, 4,394 cu. yds. at $1.10	4,833.40	
1½-inch maintenance materials, 8,249.5 cu. yds. at $1.10	9,074.45	
¾-inch maintenance materials, 4,446.5 cu. yds. at $1.10	4,891.15	
½-inch maintenance materials, 4,129 cu. yds. at $1.10	4,541.90	
Truck haul, 45,933.3 yd. mi. at 15c	6,890.00	
Force account items:		
Maintain temporary surfacing	474.39	
Plank soft grade during wet season	36.28	
Prepare stock pile site	545.42	
Clear filler pits	562.90	
Build bulkheads for stock pile	842.86	
Excavate soft spots and backfill with rock	152.72	
Sprinkle surfacing materials	1,953.35	
Cut down grade in Wheeler	14.21	
Reload stockpiled material	84.46	
Reshape surface	940.23	
Level filler pit to drain same	81.44	
Placing emergency gravel	392.15	
Total amount earned by contractor	$145,467.93	
Deduction for haul adjustment	624.73	
Total amount paid to contractor		144,843.20
Grand total cost of project		$162,634.19

PARTICIPATION IN COST

	State	*County*	*Government*	*Total*
Expended 1927-28 biennium	$120,340.50	$	$	$120,340.50
Expended 1929-30 biennium	39,198.59		3,095.10	42,293.69
Total of expenditures	$159,539.09	$	$ 3,095.10	$162,634.19
Estimated cost to complete ....Cr.	34,800.00	34,800.00		
Estimated total cost	$124,739.09	$ 34,800.00	$ 3,095.10	$162,634.19

Mohler-Wheeler Grading

Federal Aid Project No. 129-D

On the Roosevelt Coast Highway, from Mile Point 50.97 at Sta. 1417+50, which station is approximately 500 feet north of the bridge over the South Fork of the Nehalem River at Mohler, south to Mile Point 52.27 at Sta. 1349+00, which station is approximately one mile north of Mohler; 1.30 miles of grading, 30-foot standard roadbed.

Contract No. 904, awarded July 28, 1926, to Hauser Brothers, of Portland, Oregon. Work commenced August 15, 1926. Completed July 31, 1927. Final cost, $45,764.52. Resident Engineer, G. S. Gray.

Further details will be found on page 414 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 2,429.96
Removing slides and widening roadbed		4,720.21
Purchase of extra right-of-way		19.00
Building approach road to Rupp crossing		30.50
Building concrete culvert at Station 1398+75		1,039.41
Constructing Mohler overflow trestle		3,549.80
Constructing cattle pass		692.62
Constructing and maintaining detour road		88.90
Clearing borrow pit site		59.50
Contract items as follows:		
Clearing and grubbing, lump sum	$ 2,500.00	
Roadbed excavation, 10,079.6 cu. yds. at 35c	3,527.86	
Borrow excavation, 48,894.1 cu. yds. at 50c	24,447.05	
Slide excavation, 862.6 cu. yds. at 50c	431.30	
Overhaul, 6,354 yd. stas. at 5c	317.70	
12-inch concrete pipe, 152 lin. ft. at $2.50	380.00	
18-inch concrete pipe, 162 lin. ft. at $4.00	648.00	
36-inch concrete pipe, 66 lin. ft. at $7.50	495.00	
Class "C" concrete, 4.34 cu. yds. at $40.00	173.60	
Force account items:		
Placing temporary plank surfacing at road crossing	113.77	
Filling around cattle pass because of late completion of same	78.19	
Reshaping roadbed after winter settlement	22.15	
Total amount paid contractor		33,134.62
Grand total cost of project		$ 45,764.52

PARTICIPATION IN COST

	State	*County*	*Government*	*Total*
Expended 1925-26 biennium	$ 10,917.91	$	$	$ 10,917.91
Expended 1927-28 biennium	4,599.22	13,651.20	16,480.32	34,730.74
Expended 1929-30 biennium	Cr. 5,183.81		5,299.68	115.87
Total of expenditures	$ 10,333.32	$ 13,651.20	$ 21,780.00	$ 45,764.52

Wheeler-Brighton Grading

Federal Aid Project No. 129-E

On the Roosevelt Coast Highway, from M. P. 53.9, Sta. 1147+00, which station is approximately one-half mile south and west of the town of Wheeler, south to M. P. 56.76, Sta. 1002+00, which station is at Brighton; 2.86 miles of grading, 32 foot standard roadbed.

Contract No. 917, awarded August 26, 1926, to John Hampshire, of Grants Pass, Oregon. Work commenced October 18, 1926; completed October 31, 1927. Final cost, $164,561.60. Resident Engineer, G. S. Gray.

Continuation of this project into the present report is occasioned only by the inclusion of delayed charges from the previous biennium. For details of the project see pages 402-3 of the 1925-26 report and pages 414-15 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 5,218.96
Moving S. P. R. R. Co. tracks and appurtenances		3,293.70
Constructing culverts, tile drains, and drainage ditches		1,284.48
Constructing guard fence		985.62
Placing riprap		180.22
Removing slides and cleaning ditches and culverts		15,295.26
Repairing washouts and widening roadbed		3,216.67
Contract items as follows:		
Clearing and grubbing, lump sum	$ 11,000.00	
Class "A" excavation, 100,858.8 cu. yds. at 45c	45,386.46	
Class "B" excavation, 95,621.7 cu. yds. at 55c	52,591.94	
Culvert excavation, 1,911.8 cu. yds. at $1.00	1,911.80	
Overhaul, 247,304 yd. stas. at 2c	4,946.08	
12-inch concrete pipe, 916 lin. ft. at $1.50	1,374.00	
18-inch concrete pipe, 771 lin. ft. at $2.50	1,927.50	
24-inch concrete pipe, 556 lin. ft. at $3.50	1,946.00	
36-inch concrete pipe, 108 lin. ft. at $6.00	648.00	
6-inch porous drain tile, 460 lin. ft. at 20c	92.00	
Rock borrow, 5,150.5 cu. yds. at $1.00	5,150.50	
Rubble masonry, 107 cu. yds. at $16.00	1,712.00	
Rock backfill, 15 cu. yds. at $1.50	22.50	
Culvert mats, 4.032 M-FBM at $30.00	120.96	
Extra clearing and grubbing, 4.47 acres at $400.00	1,788.00	
Force account items:		
Falling and removing dangerous trees and snags	360.55	
Hand placing rock along face of R. R. embankment	641.93	
Repair plank road in Brighton for detour road	210.46	
Remove logs, stumps and cribbing in old fills	463.28	
Construct culverts and outlets	1,214.71	
Construct plank driveway to old county road	263.09	
Removing slide materials and reslope cuts	1,314.93	
Total amount paid to contractor		135,086.69
Grand total cost of project		$164,561.60

PARTICIPATION IN COST

	State	*County*	*Government*	*Total*
Expended 1925-26	$ 229.95	$	$	$ 229.95
Expended 1927-28	119,491.80		41,750.13	161,241.93
Expended 1929-30	Cr. 65,599.55	58,000.00	10,689.27	3,089.72
Total expended	$ 54,122.20	$ 58,000.00	$ 52,439.40	$164,561.60

Cloverdale-Neskowin Bituminous Macadam

On the Roosevelt Coast Highway on intermittant sections between Cloverdale and Neskowin; 6.98 miles of bituminous macadam 2 inches thick and 18 feet wide. This work was done by state oiling crew under Foreman D. Cooper during August and September, 1930.

Estimated cost, $24,500. Expenditures to date have amounted to $20,709.95. Resident Engineer, G. S. Gray.

Jetty Creek-Brighton Grading

On the Roosevelt Coast Highway, from Sta. 951+00, which station is approximately 0.38 miles south of the depot at Jetty, north to Sta. 1003+80, which station is opposite the Brighton Lumber Mill at Brighton; 1.00 mile of grading 28-foot standard roadbed.

Contract No. 732, awarded May 28, 1924, to United Contracting Co., of Portland, Oregon. Work commenced June 26, 1924; completed December 15, 1924. Estimated cost, $82,000; expenditures to date $79,086.09, consisting of $54,086.09 from state funds and $25,000 from county funds. Resident Engineer, G. S. Gray.

The continuation of this project into the present report is due to the litigation following completion of the construction work. For discussion of the project and the early steps in the process of litigation, reference is made to pages 400 and 401 of the 1925-26 report, and page 410 of the 1927-28 report. During the subsequent biennium a decision of the trial court was received in the case which awarded to the plaintiffs practically their entire claim. The case was appealed to the Supreme Court and the decision of the trial court was reversed as to its ruling on the demurrer of the state challenging the right of the plaintiff to maintain its suit on the contention that it was in effect a suit against the state rather than against the members of the State Highway Commission, who were named as defendants. This has placed the matter in the position where settlement upon the contract is expected to be made at an early date on the basis of the final estimate as prepared by the State Highway Engineer.

Further details will be found on page 410 of the 1927-28 report and pages 400-401 of the 1925-26 report.

Rockaway-Garibaldi Grading

Federal Aid Project No. 129-F

On the Roosevelt Coast Highway, from Sta. 765+60, which station is approximately one-tenth mile south of the railroad station at Rockaway, south to Sta. 535+50, which station is approximately one-half mile north of the Garibaldi post office; 4.36 miles of grading, 32-foot standard roadbed.

Contract No. 965, awarded March 29, 1927, to Guy F. Atkinson, of Portland, Oregon. Work commenced April 12, 1927; completed June 22, 1928. Estimated cost $230,000, consisting of $78,616.22 from state funds, $70,000 from county funds and $81,383.78 from government funds. Expenditures to date have amounted to $210,808.24, consisting of $65,073.71 from state funds, $64,350.75 from county funds and $81,383.78 from government funds. Resident Engineer, until April, 1928, A. J. Olsen; after April, 1928, B. O. Johnson.

As stated in the discussion of this project found on pages 418-19 of the 1927-28 report, final settlement with the contractor had not been made at the date of that report, although the contract work had been entirely completed, because of unsettled claims made by the contractor for extra payments. At the close of 1930 some of these claims still remain unsettled. The list of claims originally presented by the contractor included a large number of small items which were readily adjusted and the list thereby reduced to four of the major items upon which no agreement could be reached. These claims involved questions of law as well as of fact, and in accordance with an understanding reached with the contractor, suit was filed in the Circuit Court of Multnomah County under the so-called Declaratory Judgments statute for the purpose of securing a judgment of the court on the legal points involved; it being further agreed that the questions of fact and amounts of claims payable, if any such retained a legally contestable status following the court's decision on their legal aspects, should be determined by a board of engineering arbitrators. Of the four claims submitted to the court for consideration, two were decided to have no legal status and two to be legally proper claims. At the date of this writing the matter is pending the appointment and consideration of a board of arbitrators. These arbitrators are to be selected one by the contractor, one by the state, and a third by the other two.

Further details will be found on pages 418-19 of the 1927-28 report.

Miami River Bridge

Federal Aid Project No. 129-C

On the Roosevelt Coast Highway near Garibaldi; one 100-foot steel truss span and two 20-foot concrete approach spans.

Contract No. 896, awarded June 24, 1926, to J. J. Badraun, of Portland Oregon. Work commenced July 15, 1926. Completed March 25, 1927. Final cost, $22,622.04. Resident Engineer, R. W. Archibald.

This project was opened in the past biennium only to record the receipt of $6,051.09 from the government. The total expenditures to date have amounted to $1,972.44 from state funds, $8,000 from county funds and $12,649.60 from government funds.

Further details will be found on page 416 of the 1927-28 report.

Rockaway Creek Culvert

On the Roosevelt Coast Highway in Rockaway, one 4x5x60-foot reinforced concrete box culvert.

Contract No. 1159, awarded February 27, 1930, to Feldschau & Son, of Tillamook, Oregon. Work commenced March 22, 1930; completed April 30, 1930. Final cost, $2,229.90. Resident Engineer, G. S. Gray.

DETAILED STATEMENT OF EXPENDITURES

Enginering		$ 143.77
Contract items as follows:		
Excavation, 57.97 cu. yds. at $10.00	$ 579.70	
Class "A" concrete, 29.75 cu. yds. at $22.00	654.50	
Class "D" concrete, 8.75 cu. yds. at $24.00	210.00	
Metal reinforcement, 6,221 lbs. at 7c	435.47	
Gas pipe handrail, 18 lin. ft. at $4.00	72.00	
Removal of old bridge and maintenance of traffic, lump sum	150.00	
Total amount earned by contractor	$ 2,101.67	
Deduction for cement adjustment	15.54	
Total amount paid to contractor		2,086.13
Grand total cost of project, all state funds, 1929-30		$ 2,229.90

Juno Overcrossing

Federal Aid Project No. 137-A

On the Roosevelt Coast Highway at Juno Station north of Tillamook; three 60-foot continuous concrete spans with 27-foot clear roadway and two 3½-foot sidewalks.

Contract No. 1225, awarded September 24, 1930, to Clackamas Construction Co., of Oregon City, Oregon. Work commenced September 24, 1930. Estimated cost, $21,000, consisting of $345.94 from state funds, $12,254.06 from government funds and $8,400 from railroad funds. No expenditures have been made to date. Resident Engineer, J. T. Skelton.

The construction of the Juno overhead crossing of the Southern Pacific railroad together with the construction of the bridge over Wilson River, and the bridges over Wilson, Hoquarton, Dougherty and Hall Sloughs will be the first improvement on the unconstructed portion of the Roosevelt Coast Highway between Kilchis River and Tillamook. The new overcrossing structure will be located about 0.34 of a mile south of the present grade crossing near Kilchis River. The new highway route is described in another section of this report under the Tillamook-Wilson River survey.

Wilson River and Wilson River Slough Bridge

Federal Aid Project No. 137-A

On the Roosevelt Coast Highway, 1.75 miles north of Tillamook. The bridge over Wilson River will be a 120-foot through concrete arch with a 40-foot concrete span at each end. The bridge over Wilson River Slough will be a 120-foot continuous type concrete viaduct. Each structure is to have a 27-foot roadway and two sidewalks.

Contract No. 1226, awarded September 24, 1930, to Clackamas Construction Co., of Oregon City, Oregon. Work commenced September 24, 1930; estimated cost, $55,000. Resident Engineer, J. T. Skelton.

No work has been started on this project to date.

Trask River Bridge

Federal Aid Project No. 137

On the Roosevelt Coast Highway, 1.2 miles south of Tillamook; 120-foot steel pony truss with 285 lineal feet of pile trestle approaches, 24-foot roadway.

Contract No. 1060, awarded December 19, 1928, to Gilpin Construction Co., of Astoria, Oregon. Work commenced February 10, 1929; completed May 31, 1929. Final cost, $25,164.13. Resident Engineer, L. C. Smitton.

This structure is a part of a line revision along the Trask River. The steel span is the longest pony truss span that has been built by this department.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 2,011.51
Grading approaches		2,453.30
Expense shifting right-of-way fence		17.90
Contract items as follows:		
Cedar piling, 3,654 lin. ft. at 63c	$ 2,302.02	
Piling cut-off, 231 lin. ft. at 31c	71.61	
Lumber and timber, 47.5644 M-FBM at $50.00	2,378.22	
Structural steel, 184,162 lbs. at 6½c	11,970.53	
Trestle superstructure, 281.7 lin. ft. at $13.00	3,662.10	
Removal of old bridge and maintenance of traffic, lump sum	250.00	
Force account items:		
Wrapping dolphins	48.14	
Placing temporary bent under old approach	26.66	
Total amount earned by contractor	$ 20,709.28	
Deduction for guard rail eliminated from superstructure, 557.2 F. B. M. at $50.00 per M-FBM	27.86	
Total amount paid to contractor		20,681.42
Grand total cost of structure, all state funds, 1929-30		$ 25,164.13

Hoquarton, Daugherty and Hall Slough Bridges

Federal Aid Project No. 137-A

On the Roosevelt Coast Highway, north of Tillamook. The bridge over Dougherty Slough will be a 130-foot concrete viaduct with 27-foot roadway and two sidewalks. The bridge over Hall Slough will be an 80-foot concrete viaduct with 27-foot roadway and two sidewalks. The bridge over Hoquarton Slough will be a 100-foot concrete viaduct with 36-foot roadway and two sidewalks.

Contract No. 1224, awarded September 24, 1930, to Clackamas Construction Co., of Oregon City, Oregon. Work commenced September 24, 1930. Estimated cost, $45,000, consisting of $19,354.67 from state funds and $25,645.33 from government funds. There have been no expenditures to date. Resident Engineer, J. T. Skelton.

The contractor has started to get material and equipment on the ground for these projects.

Maintenance

At the close of the present biennium there were 84.38 miles of state highways under maintenance in Tillamook County consisting of 10.24 miles of bituminous pavement, 3.77 miles of concrete pavement, 29.27 miles of bituminous macadam, 33.38 miles of oiled macadam and 7.72 miles of untreated macadam.

Following the completion of the Roosevelt Coast Highway in Tillamook County from Mohler to Garibaldi, that section has been covered throughout its length either with bituminous macadam or heavy oil surface treatment, rock material for this work having been furnished in connection with the surfacing contract. From Mohler to Lake Lytle Bridge, through the business district of Rockaway, and through the business district of Garibaldi, bituminous macadam has been used and the remaining sections have been covered with a heavy oil surface treatment.

The Clatsop County line-Mohler section, remains unchanged and the Garibaldi-Wilson River section has been continued in its surface-treated status with partial reoilings each year in sections where the previous surface treatments had given away. The Moore Cut-off section has been covered by a major betterment project, as described in this report under the heading "Hemlock-Pleasant Valley Resurfacing."

From Beaver to a point 0.42 mile north of the Nestucca River Bridge the surfacing has been extensively patched and reshaped with plant mixed material and no general reoiling has been done. The bituminous macadam surfacing laid in 1928 from Hebo to the Big Nestucca River has been extended north a distance of 0.42 mile. From Hebo to Cloverdale bituminous macadam was constructed in 1929. From Cloverdale to Neskowin in each of the years 1929 and 1930 several sections of the road were covered with light bituminous macadam and the remaining sections reoiled where necessary. In 1930 also an aggregate of 6.98 miles where the previously oiled surfacing had failed, in a manner showing that the trouble lay in inadequate macadam, the road has been scarified, reshaped and resurfaced in part with quarry run rock from cuts in the vicinity of

Daley Lake and partly with run-of-bar gravel from Neskowin Creek. These sections have also been given a bituminous macadam surfacing. From Neskowin to the Lincoln County line the road has been under reconstruction and no oiling has been done.

On the McMinnville-Tillamook Highway between Hebo and Dolph a general reoiling with heavy oil surface treatment was done in 1929, accompanied by a moderate amount of plant-mixed patching. Practically no reoiling was done on this section in 1930.

Other maintenance work in the county has been confined to the routine operations of regular patrol maintenance, except for the snow removal work imposed by the storm of January, 1930. During that time an almost unheard of condition for a coast county existed when over a foot of light drifting snow fell and continued dry enough to drift for several days. Drifts of three to eight feet occurred in a number of places for several hundred feet which could not be cleared until a rotary snow plow was dispatched to do the work.

During the biennium, the total amounts expended in the county for general maintenance and minor betterments have been $168,982.49 and $49,315.48 respectively.

Pleasant Valley-Hemlock Resurfacing

On the Roosevelt Coast Highway, from Sta. 261+18, which station is about one-half mile north of the Pleasant Valley cheese factory, south to Sta. 419+25, about one mile north of the store at Hemlock; 3.0 miles of resurfacing and furnishing maintenance materials.

Contract No. 1220, awarded August 28, 1930, to Joslin & McAllister, of Spokane, Washington. Work commenced October 1, 1930. Estimated cost, $42,000 from state funds; expenditure to date $444.97. Resident Engineer, G. S. Gray.

For several years the exceptionally heavy log haul traffic over the Roosevelt Coast Highway between Hemlock and Tillamook has given considerable trouble and necessitated considerable expense in the maintenance of the three-mile unpaved section from a point one mile north of Hemlock to Pleasant Valley, known as the Moore Cut-off. This section was originally constructed in 1920-21 and surfaced with a run-of-bar gravel surfacing. For much of its length it traverses rather low and more or less unstable ground where it has been found extremely difficult to maintain the oiled surface with which it was later treated. Serious consideration has been given to paving of the section, but because it was thought inadvisable to perpetuate the existing alignment with an expensive permanent pavement, that type of improvement was rejected and instead a resurfacing with a heavy type bituminous macadam wearing surface was decided upon.

This project provides for widening of the roadbed with two or three minor improvements in alignment, which work is being done by state forces. The contract work provided for salvaging of the oil mat material from the old surfacing; resurfacing of the roadbed to a width of 24 feet with run-of-bar gravel to a depth of 12 inches loose measure on the less stable parts of the section, and 8 inches on the sections where subgrade conditions are better; adding thereto a crushed gravel surfacing to be set up with the salvaged oil mat material, and the furnishing of crushed gravel material for the future construction of the bituminous macadam wearing surface. The run-of-bar and crushed gravel material is being secured from a bar in Beaver Creek at the East Beaver cheese factory about one and a half miles south of the south end of the Moore Cut-off. In connection with the contract there is also being furnished crushed gravel material for a non-skid surface on the adjacent section of bituminous pavement.

Tillamook-Wilson River Survey

In 1929 a survey was undertaken for the section of the Roosevelt Coast Highway north from Tillamook to the Kilchis River. This section is the only remaining section in Tillamook County which has been considered as unconstructed state highway, the state route having followed the old county road.

The new line follows the existing paved county road north from Tillamook City, with the exception of a slight revision at the crossing of Hoquarton Slough within the city limits, to the north end of a long tangent leading to Wilson River. From that point the line continues directly north crossing Wilson River on a new bridge and the Southern Pacific Railroad on an overhead structure to be constructed about 0.34 of a mile south of the grade crossing of the county road, and thence skirts the foot of the hill to Kilchis River. Between Wilson River and Kilchis River, a saving of approximately 920 feet in length is made in a total of 1.33 miles.

This survey was made under the direction of Geo. S. Gray, Resident Engineer.

Moore Cut-off Survey

Anticipating the necessity for improvement of the section of the Roosevelt Highway known as the Moore Cut-off—a three-mile unpaved section between Pleasant Valley and Hemlock—a survey for relocation was made under the direction of Geo. S. Gray, Resident Engineer. This survey contemplated a number of minor line changes in the southerly part of the section and one major change in the vicinity of the Pleasant Valley Cheese Factory near the north end.

The length of the unpaved section is 3.0 miles but the survey was extended onto adjoining sections to insure proper connection with possible future realignment on those sections and the total length of the survey was, therefore, about 4½ miles.

The revisions contemplated in this survey have been rejected however, and the actual improvement of the Moore Cut-off which is now under contract is along a second revised location following more closely the original line. This later revision survey was also made by Mr. Gray under the same accounting prefix as the first revision.

[TILLAMOOK]

Neskowin-Hebo-Grand Ronde Maintenance Materials

On the Neskowin-Hemlock section of the Roosevelt Coast Highway and on the Hebo-Grand Ronde section of the McMinnville-Tillamook Highway; furnishing broken stone for use by the state in connection with maintenance operations.

Contract No. 952, awarded March 3, 1927, to R. W. Stevenson, of Mt. Vernon, Washington. Work commenced July 26, 1927; completed March 31, 1929. Estimated cost, $74,000. Resident Engineer, G. S. Gray.

For a description of this job and discussion of the circumstances which brought about the excessive delay in completion of the contract, see page 422 of the biennial report for 1927-28. The work was ultimately completed in March, 1929, more than two years after the contract was awarded, and 18 months after the date for completion specified in the contract. Final settlement with the bonding company who took over the contract from the original contractor and completed the work was only made after extended discussion and controversy over the item of adjustment of haul. This matter, however, was ultimately worked out acceptably to the bonding company.

Further details will be found on page 422 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 4,207.22
Labor and materials furnished by state:		
Purchase of quarry sites		160.00
Lease of stock pile sites		130.00
Constructing surfacing with state forces		4,821.63
Haul and stock pile maintenance materials		10,519.35
Preparing stock pile sites		2,629.70
Signs for traffic control		28.38
Tents furnished to rock checker		30.75
3,000 cu. yds. of additional materials purchased from R. W. Stevenson at $1.35 per yd.		4,050.00
Credit for materials transferred to Hebo-Cloverdale section Cr.		5,750.00
Credit for materials transferred to Moore Cut-off project Cr.		4,300.00
Credit for materials transferred to maintenance account Cr.		2,472.80
Contract items as follows:		
Hauling and piling materials at Cedar Creek, 1,457.50 cu. yds. at 32c	$ 466.40	
Truck haul, 32,694.70 yd. mi. at 18c	5,885.05	
Grade "A" materials in stock piles, 2,380.10 cu. yds. at $2.45	5,831.25	
Grade "B" materials in stock piles, 3,523.62 cu. yds. at $2.25	7,928.15	
Grade "C" materials in stock piles, 1,717.53 cu. yds. at $2.20	3,778.57	
Grade "D" materials in stock piles, 12,339.29 cu. yds. at $2.15	26,529.47	
Grade "E" materials in stock piles, 256.47 cu. yds. at $2.05	525.76	
Grade "A" materials in trucks, 1,205.50 cu. yds. at $1.75	2,109.63	
Grade "B" materials in trucks, 2,480.50 cu. yds. at $1.55	3,844.78	
Grade "C" materials in trucks, 1,378.50 cu. yds. at $1.55	2,136.68	
Grade "D" materials in trucks, 2,657.00 cu. yds. at $1.45	3,852.65	
Grade "E" materials in trucks, 3.5 cu. yds. at $1.35	4.73	
Grade 2½-inch materials in trucks, 664 cu. yds. at $1.45	962.80	
Grade "X" materials in trucks, 8 cu. yds. at $1.50	12.00	
Extra stock piling, 3,243.5 cu. yds. at 7c	227.05	
Allowance for contractors hauling bridge	150.00	
Total amount earned by contractor	$ 64,244.97	
Deduction for haul adjustment	5,649.07	
Total amount paid to contractor		58,595.90
Grand total cost of project, all state funds		$ 72,650.13

SEGREGATION OF FUNDS

Expended 1927-28 biennium	$ 22,930.43
Expended 1929-30 biennium	49,719.70
Total of expenditures	$ 72,650.13

Dolph-Hebo Survey

During the early part of the biennium just ended, surveys at several points on the McMinnville-Tillamook Highway between Dolph and Hebo were made in anticipation of the necessity of replacing a number of small wooden bridges over Louie Creek, Baxter Creek, Alder Creek and Buck Creek. This relocation survey was carried on at three separate points with reconnaissance investigation between to assure the location being properly made for later connections between them. As a result of the survey, the present bridge over Buck Creek would be eliminated, but the new location, which falls along the opposite side of Alder Creek at that point, and one of the crossings at Alder Creek would be moved about a mile east of the present location. As yet the construction of the new bridges has not been undertaken, the old bridges having been strengthened and widened to afford continued service until such time as a general reconstruction project of the Dolph-Hebo section may be undertaken.

These surveys were made under the supervision of B. O. Johnson, Resident Engineer.

UMATILLA COUNTY

Umatilla County is served by five state highways and has the greatest mileage of state highways within its boundaries of any county in Eastern Oregon, and ranks third in the entire state on a mileage basis. Of the five highways serving the county, the Old Oregon Trail, the Oregon-Washington and the Pendleton-Cold Springs Highways are completed. The Pendleton-John Day Highway is rapidly nearing completion in the county, only about 8 miles remaining that are not graded or under contract. No construction work has been done on the Umatilla Cut-off, but the location survey has been completed during the biennium.

The total state highway mileage in the county, inclusive of mileages within cities and towns, is approximately 242 miles. Of this mileage all has been graded and surfaced with the exception of 20 miles on the Umatilla Cut-off and about 15 miles on the Pendleton-John Day Highway. Of the 15 miles not graded on the Pendleton-John Day Highway, approximately 8 miles are under contract, the work being done under the supervision of the United States Bureau of Public Roads.

During the present biennium new construction work has consisted of the surfacing of 11.66 miles on the Lazinka Ranch-Albee section of the Pendleton-John Day Highway. Major betterment work on existing highways has included the widening, resurfacing and construction of a bituminous macadam wearing surface on the Morrow County line-Umatilla sections of the Old Oregon Trail, 4.2 miles of ditching and widening and 3.0 miles of bituminous macadam construction on the Pendleton-Union County line section of the Old Oregon Trail, 7.0 miles of ditching on the McKay Creek-Pilot Rock section of the Oregon-Washington Highway and approximately 16 miles of widening and rock shoulder construction on the Pendleton-Washington state line section of the Oregon-Washington Highway.

All highway work in the county has been under the supervision of Division Engineer H. G. Smith, with headquarters at La Grande.

Lazinka Ranch-Albee Surfacing

On the Pendleton-John Day Highway, from Sta. 991+00, which station is near the Lazinka Ranch about 14 miles southwest of the town of Pilot Rock, to Sta. 375+47, which station is about 7 miles north of Ukiah; 11.66 miles of broken stone surfacing, 16 feet wide and from 7½ to 11½ inches in depth.

Contract No. 1057, awarded December 19, 1928, to the Willamette Contracting Company, of Portland, Oregon. Work commenced May 10, 1929; completed December 7, 1929. Estimated cost, $85,000. Resident Engineers, W. W. Stiffler and C. E. Carter, successively.

The grading on this section was completed in October, 1928, and the immediate need of surfacing was apparent. The contract was awarded in December, 1928, and the contractor moved onto the job and completed his setup in sufficient time to begin placing rock in May, 1929.

The 11.66 miles of surfacing on this section completes the surfacing of the Pendleton-John Day Highway from its northern terminus to the town of Ukiah.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 5,625.20
Labor and materials furnished by state:		
Purchase of quarry site		257.75
Removing slides, repairing washouts, widening roadbed		112.03
Constructing tile drains		403.29
Sprinkling surfacing		1,385.76
Furnishing and placing filler		515.97
Preparing stock pile sites		43.05
Contract items as follows:		
Sub-base course surfacing, 14,863 cu. yds. at $1.50	$ 22,294.50	
Base course surfacing, 9,563 cu. yds. at $1.50	14,344.50	
Top course surfacing, 7,852 cu. yds. at $1.50	11,778.00	
Grade "A" materials, 3,779.3 cu. yds. at $1.30	4,913.09	
Grade "B" materials, 3,404.9 cu. yds. at $1.30	4,426.37	
Grade "C" materials, 2,891.5 cu. yds. at $1.20	3,469.80	
Filler, 15,447 cu. yds. at 20c	3,089.40	
Filler haul, 42,559 yd. mi. at 17c	7,235.03	
Stripping filler pits, 965.2 cu. yds. at 25c	241.30	
Earth cushion, 757 cu. yds. at 20c	151.40	
Earth cushion haul, 1,045 yd. mi. at 17c	177.65	
18-inch corrugated iron pipe, 212 lin. ft. at $1.50	424.00	
Force account items:		
Clearing and grubbing, excavating test holes and building fences at filler pits	430.01	
Removing oversize rocks from roadway	461.77	
Drilling and shooting hillside for filler materials	3,108.49	
Preparation of stock pile sites and haul roads	112.95	
Total amount earned by contractor	$ 76,658.26	
Deductions:		
Hauling adjustment	286.50	
Rental of state equipment	85.62	
Final estimate in process of payment	2,016.10	
Total amount paid to contractor		74,270.04
Total expended on project, all state funds, 1929-30		$ 82,613.09

Jones Hill-Vinson, East Unit, Surfacing

This project was completed during the previous biennium and a descriptive article will be found on page 427 of the 1927-28 report.

The only expenditure during the past biennium was for the final estimate payment of $425.18 to the contractor. The total cost of the project amounts to $16,825.53, all state funds.

Morrow County Line-Umatilla Regrading and Resurfacing

Federal Aid Project No. 145-A

On the Columbia River Highway, from Sta. 0+00, which station is at the point where the Columbia River Highway crosses the boundary line between Morrow and Umatilla Counties, to Sta. 191+45, which station is approximately one-half mile west of the town of Umatilla; 3.62 miles of regrading roadbed 26 feet wide and resurfacing with pit-run gravel topped with salvaged crushed gravel materials, to a width of 20 feet and approximately 11 inches in thickness.

Contract No. 1058, awarded December 19, 1928, to George Abraham, of Portland, Oregon. Work commenced February 21, 1929; completed July 3, 1929. Final cost, $37,589.43. Resident Engineer, W. W. Stiffler.

[UMATILLA]

A combination of low subgrade and wornout surfacing on this section made regrading and resurfacing imperative in order to prevent failure of the road during the annual spring thaw. The results obtained from the regrading and resurfacing have proven very successful.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 3,654.01
Labor and materials furnished by state:		
Rental and parts for state equipment deducted from contractor's estimate		37.00
Maintaining completed portions of project		152.60
Sprinkling surfacing		1,945.74
Signs for traffic control		20.74
Contract items as follows:		
Clearing and grubbing, lump sum	$ 12.00	
Common excavation, 33,865 cu. yds. at 50c	16,932.50	
Intermediate excavation, 3,694.8 cu. yds. at 50c	1,847.40	
Solid rock excavation, 1,720.1 cu. yds. at 70c	1,204.07	
Overhaul, 19,512 yd. stas. at 3c	585.36	
Truck haul, 22,153.8 yd. mi. at 15c	3,323.07	
12-inch concrete pipe, 777 lin. ft. at $1.10	854.70	
18-inch concrete pipe, 162 lin. ft. at $2.50	405.00	
24-inch concrete pipe, 12 lin. ft. at $3.00	36.00	
30-inch concrete pipe, 15 lin. ft. at $5.00	75.00	
Salvaged pipe, 222 lin. ft. at $1.00	222.00	
Class "C" concrete, 16.934 cu. yds. at $25.00	423.35	
Pit run gravel, 5,718.5 cu. yds. at 50c	2,859.25	
Salvaged materials, 6,045.5 cu. yds. at 50c	3,022.75	
Stripping gravel pit, 1,249.6 cu. yds. at 35c	437.36	
Force account items:		
Cleaning existing culverts	294.48	
Unused 12-inch concrete culvert pipe	39.90	
Total amount earned by contractor	$ 32,574.19	
Deductions:		
Rental and parts for state-owned equipment	49.80	
Engineering expense charged to contractor because of overrun of time limit	745.05	
Total amount paid to contractor		31,779.34
Grand total cost of project, 1929-30		$ 37,589.43

PARTICIPATION IN COST

	State	*Government*	*Total*
Expended to date	$ 23,930.40	$ 13,659.03	$ 37,589.43
Estimated cost to complete	Cr. 16,261.81	16,261.81	
Estimated total cost	$ 7,668.59	$ 29,920.84	$ 37,589.43

Morrow County Line-Umatilla Bituminous Macadam Wearing Surface

Federal Aid Project No. 145-A

On the Columbia River Highway, from the Morrow-Umatilla County line to Umatilla; 2.8 miles of bituminous macadam wearing surface, 20 feet wide and approximately 1½ inches in compacted thickness.

Work commenced July, 1929; completed July, 1930. Final cost, $5,854.97 from state funds.

Upon completion of regrading and resurfacing of the Morrow County Line-Umatilla section, a bituminous macadam wearing surface was constructed by state forces, the work being done by an oiling crew under direction of W. H. Stewart. C. E. Carter, Resident Engineer, had supervision over the work.

Emigrant Hill-Meacham Bituminous Macadam Wearing Surface

On the Old Oregon Trail between Mile Points 249 and 250, between Mile Points 254 and 255, and between Mile Points 264.8 and 265.8; 3.0 miles of bituminous macadam wearing surface, 18 feet wide and approximately 2½ inches in compacted thickness.

Work commenced July, 1929; completed August, 1929. Final cost, $13,523 from state funds.

In order to determine the suitability of bituminous macadam wearing surface on the Blue Mountains, where winter weather conditions are very severe, three miles of this type of surfacing were constructed by state forces. The work was done by oiling crew No. 1. Roland Hopper, foreman, under supervision of W. C. Williams, Resident Engineer.

Emigrant Hill-Kamela Ditching and Widening

On the Old Oregon Trail from Mile Point 253.0 near Deadman's Pass to Mile Point 257.2; 4.2 miles of ditching and widening roadbed to width of 30 feet.

Work commenced November 3, 1928; completed September 28, 1929. Final cost, $23,241.08 from state funds.

The failure of the road surface on this section during each spring thaw, made it imperative that better drainage be provided to properly care for both surface and underground seepage water. The work of constructing the ditches was performed by state forces using a small power shovel and light trucks. The material excavated from the ditches was used in widening the roadbed, a uniform width of 30 feet being obtained. The work included the construction of a revision in alignment between Mile Points 254.2 and 254.4, the revision eliminating three sharp curves. The work was discontinued during the period from December 8, 1928, to June 1, 1929. Joe Garney, extra gang foreman, handled the work under the supervision of Resident Engineers Oscar Cutler and W. C. Williams, successively.

McKay Creek-Pilot Rock Ditching

On the Oregon-Washington Highway, ditching at intermittent points between McKay Creek and Pilot Rock; 7.0 miles of ditching.

Work commenced January 15, 1929; completed May 30, 1929. Final cost, $15,863.31 from state funds.

In order to prevent the breaking up of the oiled surface on this section, it was necessary to construct better side drain ditches. The material excavated from the ditches was used in widening narrow places in the roadbed. State forces, using a small power shovel and light trucks, performed the work under direction of Foreman Joe Garney who was under the supervision of Resident Engineer C. E. Carter. The work was authorized under a minor betterment order and the expenditures are included in that classification.

[UMATILLA]

Athena-Milton Roadbed Widening

On the Oregon-Washington Highway, from Athena to Milton; 13.0 miles of widening roadbed to width of 30 feet, and constructing rock shoulders 4 feet wide and 12 inches in depth.

Work commenced April, 1930. Estimated cost, $27,000 from state funds. Expenditures to date, $24,507.39.

The 16-foot pavement constructed on a 20-foot roadbed in 1920 and 1921 was too narrow to adequately care for the increased traffic of the present. The immediate need of improvement being apparent, the work was performed by state forces under direction of Joe Garney, extra gang foreman, who was under the supervision of Resident Engineer C. E. Carter.

A power shovel and light trucks were used on the work. The rock shoulders were compacted by means of a steam roller, the rock used for the shoulders being pit-run material obtained from state quarries. It is planned to construct a bituminous macadam wearing surface on the rock shoulders and cover the old pavement with a non-skid top during the next biennium.

South Unit, Lazinka Ranch-Albee Grading

On the Pendleton-John Day Highway, from the south end of the North Unit of the Lazinka Ranch-Albee section to the north end of the Albee-Ukiah section, near Albee; 6.0 miles of grading.

Contract No. 1019, awarded November 29, 1927, to Rhodes & Dillard, of Medford, Oregon. Work commenced February 24, 1928; completed October 31, 1928. Final cost, $85,289.81. Resident Engineer, W. W. Stiffler.

Further details will be found on page 428 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 5,548.19
Contract items as follows:		
Clearing and grubbing, lump sum	$ 10,000.00	
Common excavation, 26,154.1 cu. yds. at 55c	14,384.76	
Intermediate excavation, 17,512.4 cu. yds. at 55c	9,631.82	
Solid rock excavation, 49,967.1 cu. yds. at 55c	27,481.91	
Overhaul, 78,487 yd. stas. at 3c	2,354.61	
Earth cushion, 6,090 cu. yds. at 60c	3,654.00	
Cushion haul, 3,270.5 yd. mi. at 20c	654.10	
12-inch corrugated iron pipe, 358 lin. ft. at $1.75	626.50	
18-inch corrugated iron pipe, 694 lin. ft. at $2.60	1,804.40	
24-inch corrugated iron pipe, 138 lin. ft. at $3.50	483.00	
18-inch concrete pipe, 258 lin. ft. at $3.25	838.50	
24-inch concrete pipe, 78 lin. ft. at $5.00	390.00	
36-inch concrete pipe, 436 lin. ft. at $8.00	3,488.00	
Class "A" concrete, 69.98 cu. yds. at $35.00	2,449.30	
Class "C" concrete, 1.84 cu. yds. at $24.00	44.16	
Rubble masonry, 91.91 cu. yds. at $8.00	735.28	
Reinforcing steel, 8,149 lbs. at 8c	651.92	
Lumber, 1.734 M-FBM at $40.00	69.36	
Total amount paid to contractor		79,741.62
Grand total cost of project		$ 85,289.81

PARTICIPATION IN COST

	State	*County*	*Total*
Expended 1927-28 biennium	$ 4,929.15	$ 71,160.44	$ 76,089.59
Expended 1929-30 biennium	619.04	8,581.18	9,200.22
Total of expenditures	$ 5,548.19	$ 79,741.62	$ 85,289.81

Ukiah-Dale Forest Road Grading

Two sections on the Pendleton-John Day Highway between Ukiah and Dale were placed under contract by the Bureau of Public Roads in 1930. The north unit extends from Ukiah south 3.2 miles and was awarded June 5, 1930, to O. D. Wolfe, of Washougal, Wn. Grading work was started July 10, 1930, and at the date of this report is approximately 90 per cent complete. It is anticipated that an extension of this contract will be made in order to reduce the length of section to be contracted in 1931 on the 7.15-mile gap between the north and south units. The extension will amount to approximately 20 per cent of the original bid price and will be 0.58 mile in length.

The south unit is located from Dale northward a distance of 5.2 miles. Bids were opened on this unit June 6, 1930, and the contract was awarded to Bauers & Bauers. The grading of this section is estimated to be 45 per cent complete at September 30, 1930. Both units are being graded on the 1929 standard 16-foot roadbed width.

The estimated cost of the entire project is $200,000, the state cooperating $62,500, the county cooperating $62,500, and the government cooperating $75,000.

Maintenance

A total of 202.86 miles of state highways are under maintenance at the close of this biennium. This mileage consists of 15.46 miles of bituminous macadam, 75.45 miles of oiled macadam, 74.03 miles of untreated macadam, and 37.92 miles of asphaltic concrete.

As in past years, the most difficult section to maintain has been that portion of the Old Oregon Trail between Emigrant Hill and the Union-Umatilla County line. This section lies on top of the Blue Mountains and very severe weather is experienced during the winter, heavy snowfalls and temperatures of 30 degrees below zero being common. While snow removal has been greatly simplified by the use of modern equipment and maintenance of snow fence, the most serious trouble is experienced during each spring thaw. This annual spring thaw is of two to four months' duration on the Blue Mountains, the high elevation causing nightly frosts which retard the thawing accomplished during the warm part of the day. This long drawn out period of thawing, during which time the roadbed is constantly saturated with moisture, reduces the stability of the roadbed, and surface failures result. In an effort to overcome this condition, drain tile has been placed underneath the subgrade on several sections which will allow the moisture to drain away as melted and also keep moisture from accumulating underneath the surface during the wet weather season before the freeze-up.

During the winter of 1929-30 some trouble was encountered in keeping the newly-completed portion of the Pendleton-John Day Highway free from snow, as heavy drifts occurred in places subject to high winds. Snow fences have since been erected which it is believed will considerably improve this condition.

Headquarters for maintenance patrolmen have been established at Pendleton, Meacham, Pilot Rock, Athena and Echo. The patrol headquarters at Athena, Meacham and Pendleton are owned by the state, the Pendleton site having been acquired and a service building constructed during this biennium.

Maintenance work in Umatilla County other than described above, has been confined to the routine maintenance of roadbed, ditches, signs, guard fences, patching of oil and paved surfaces, etc.

C. E. Carter, Resident Maintenance Engineer at Pendleton, has supervised all maintenance work in the county with the exception of the Old Oregon Trail east of Mile Post 243 which has been under the supervision of W. C. Williams, Resident Maintenance Engineer at La Grande.

General maintenance expenditures in the county during the biennium have amounted to $260,067.10. The amount expended for minor betterment work has been $79,035.58.

Pilot Rock-Freewater Maintenance Materials "A"

This project was opened the past biennium only to record the credit of $1,001, which was the amount of a warrant drawn in June, 1927, in payment to the contractor, but due to the contractor having defaulted on his contract, the warrant was turned back to the state treasurer to the credit of the job and the State Highway Fund.

An article describing this project will be found on page 431 of the 1927-28 biennial report. The total expenditures amount to $13,359.38, all from state funds.

Pilot Rock-Freewater Maintenance Materials "B"

On the Oregon-Washington Highway near Pilot Rock to the Oregon-Washington State line north of Freewater; 20.0 miles of maintenance materials in stockpiles.

Contract No. 994, awarded August 30, 1927, to H. E. Schmeer, of Portland, Oregon. Work commenced September 15, 1927; completed April 10, 1929. Final cost, $20,688.48. Resident Engineer, C. E. Carter.

Further details will be found on page 433 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,037.60
Lease of gravel pit		103.00
Preparing stock pile sites		68.44
Contract items as follows:		
Grade "A" broken stone, 3,573.3 cu. yds. at $2.11	$ 7,539.66	
Grade "B" broken stone, 3,591.6 cu. yds. at $1.91	6,859.96	
Hauling broken stone, 17,829.7 yd. mi. at 20c	3,565.94	
Grade 'C" crushed gravel, 1,211.1 cu. yds. at $1.25	1,513.88	
Total amount paid contractor		19,479.44
Grand total cost of project, all state funds		$ 20,688.48

SEGREGATION OF FUNDS

Expended 1927-28 biennium	$ 13,014.75
Expended 1929-30 biennium	7,673.73
Total of expenditures	$ 20,688.48

Arlington-Pendleton Maintenance Materials

On the Columbia River Highway, from Mile Point 150.0, about 5 miles east of Arlington, to Mile Point 229.1, about 1.3 miles west of Pendleton; 82.7 miles of maintenance materials in trucks and stockpiles.

Contract No. 1007, awarded October 25, 1927, to Joslin & McAllister, of Spokane, Washington. Work commenced January 1, 1928; completed November 12, 1928. Final cost, $111,042.98. Resident Engineer, C. E. Carter.

Further details will be found on page 432 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 6,069.46
Purchase of quarry		1,096.60
Purchase and lease of stock pile sites		350.00
Prospecting for surfacing materials		537.97
Hauling and constructing surface		17,963.81
Preparing stock pile sites		921.68
Credit for material transferred to betterment work Cr.		16,939.50
Contract items:		
East Unit—		
Grade "A" materials in stock piles 7,059.4 cu. yds. at $1.64	$ 11,577.42	
Grade "B" materials in stock piles, 8,547.1 cu. yds. at $1.64	14,017.24	
Grade "C" materials in stock piles, 4,440.2 cu. yds. at $1.64	7,281.93	
Grade "A" materials in trucks, 99.0 cu. yds. at $1.00	99.00	
Grade "B" materials in trucks, 950.0 cu. yds. at $1.00	950.00	
Grade "C" materials in trucks, 2,571.5 cu. yds. at $1.00	2,571.50	
Truck haul, 10,061.8 yd. mi. at 18c	1,811.12	
Middle and West Units—		
Grade "A" materials in stock pile, 12,908.2 cu. yds. at $1.53	19,749.55	
Grade "B" materials in stock pile, 12,477.6 cu. yds. at $1.53	19,090.73	
Grade "C" materials in stock pile, 6,811.7 cu. yds. at $1.53	10,421.90	
Grade "A" materials in trucks, 147.0 cu. yds. at $1.00	147.00	
Grade "B" materials in trucks, 1,936.5 cu. yds. at $1.00	1,936.50	
Grade ‘C" materials in trucks, 11,531.0 cu. yds. at $1.00	11,531.00	
Truck haul, 45,966.1 yd. mi. at 18c	8,273.90	
Force account as follows:		
Extra expense in obtaining water to wash gravel	116.59	
Prepare stock pile sites	55.74	
Total amount earned by contractor	$109,631.12	
Deductions:		
East Unit for award of all three units	2,645.42	
Middle Unit for award of all three units	2,287.91	
West Unit for award of all three units	2,966.67	
Truck haul adjustment	688.16	
Total amount paid contractor		101,042.96
Grand total cost of project, all state funds		$111,042.98

SEGREGATION OF FUNDS

Expended 1927-28 biennium	$106,124.85
Expended 1929-30 biennium	4,918.13
Total of expenditures	$111,042.98

DETAIL OF BETTERMENT ITEMS TRANSFERRED

Grade "A" materials in stock pile, 2,942 cu. yds. at $1.53	$ 4,501.26
Grade "B" materials in stock pile, 2,978 cu. yds. at $1.53	4,556.34
Grade "C" materials in stock pile, 4,830 cu. yds. at $1.53	7,389.90
Grade "C" materials in stock pile (E. Unit), 300 cu. yds. at $1.64	492.00
Total	$ 16,939.50

East Unit, Pendleton-Kamela Maintenance Materials

On the Old Oregon Trail from Mile Point 256, which point is three miles east of Deadman Pass, to Mile Point 268.0 at Kamela; 12 miles of maintenance materials in trucks and stockpiles.

Contract No. 1001, awarded September 27, 1927, to Clyde R. Seitz, of La Grande, Oregon. Work commenced March 8, 1928; completed September 3, 1929. Final cost, $128,795.50. Resident Engineers, Oscar Cutler and W. W. Stiffler, successively.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 4,050.03
Supplies deducted from contractor's estimate		216.08
Purchase of quarry sites		296.00
Hauling and constructing surfacing		48,386.49
Preparing stock pile sites		381.27
Credit for materials stockpiled for betterment work Cr.		6,323.30
Contract items as follows:		
Grade "A" materials in stock piles, 3,521.5 cu. yds. at $2.10	$ 7,395.15	
Grade "B" materials in stock piles, 4,153.9 cu. yds. at $1.90	7,892.41	
Grade "C" materials in stock piles, 2,922.4 cu. yds. at $1.22	3,565.33	
Grade "D" materials in stock piles, 2,842.1 cu. yds. at $1.20	3,410.52	
Grade "A" materials in trucks, 45 cu. yds. at $1.60	72.00	
Grade "B" materials in trucks, 147 cu. yds. at $1.50	220.50	
Grade "C" materials in trucks, 6,596.5 cu. yds. at $1.15	7,585.98	
Grade "D" materials in trucks, 22,789.5 cu. yds. at $1.05	23,928.98	
Extra "C" materials in stock piles, 4,544.2 cu. yds. at $2.28	10,360.78	
Dust screenings, 1,080.5 cu. yds. at $0.75	810.38	
Dirt screenings, 1,618.5 cu. yds. at $0.30	485.55	
Truck haul, 85,420.3 yd. mi. at 18c	15,375.65	
Extra haul on stockpiled materials, 4,746 yd. mi. at 20c	949.20	
Total amount earned by contractor	$ 82,052.43	
Deduction for gas and oil	263.50	
Total amount paid contractor		81,788.93
Grand total cost of project, all state funds		$128,795.50

SEGREGATION OF FUNDS

Expended 1927-28 biennium	$ 79,162.11
Expended 1929-30 biennium	49,633.39
Total of expenditures	$128,795.50

DETAIL OF BETTERMENT ITEMS TRANSFERRED

Grade "A" maintenance materials, 1,500 cu. yds. at $2.10	$ 3,150.00
Grade "B" maintenance materials, 1,500 cu. yds. at $1.90	2,850.00
Grade "C" maintenance materials, 265 cu. yds. at $1.22	323.30
Total	$ 6,323.30

Emigrant Springs Park

On the Old Oregon Trail, 26 miles east of Pendleton; caretaker's quarters and comfort station at Emigrant Springs Park.

Contract No. 1198, awarded May 22, 1930, to O. N. Pierce, of Portland, Oregon. Work commenced June 10, 1930. Estimated cost, $3,200. Resident Engineer, M. Stephenson.

The log building constructed at the park in 1927 was destroyed by fire of unknown origin October 22, 1929. A smaller building, containing rest rooms and living quarters for the park caretaker, was constructed in 1930.

Additional acreage of the park grounds was improved during the biennium by clearing away dead trees and underbrush, the work being done by the caretaker, he being assisted at times while engaged in the work, by two or three helpers. The dead trees removed were cut into wood and the wood placed in the park for the convenience of the traveling public.

Further details will be found on page 434 of the 1927-28 report.

Blue Mountain Timber Reserve

On the Old Oregon Trail from a point approximately 17 miles east of Pendleton to the boundary line between Union and Umatilla Counties; 19.0 miles of timber acquisition.

During the 1929-30 biennium negotiations have been closed on additional tracts of timber. Work of clearing away dead trees and underbrush, which constitute a serious fire hazard as well as giving an unsightly appearance, has been continued during the biennium. Also some wood-hauling roads were constructed across the timber as part of an agreement made at the time the timber was acquired.

Foremen on this work were Wm. Wilkinson and C. P. Teale, successively, who worked under the supervision of Resident Engineer W. C. Williams. Expenditures during the biennium have amounted to $14,786.49 from state funds.

Further details will be found on page 437 of the 1927-28 report.

Meacham Patrol Headquarters

On the Old Oregon Trail at Meacham, 26 miles east of Pendleton.

The building housing the pumping and lighting equipment, was destroyed by an explosion during the summer of 1929. This building was reconstructed by state forces from the bridge department under the supervision of M. Stephenson, District Bridge Engineer at La Grande. The reconstruction was financed by the State Board of Control from the fund for restoration of state-owned buildings.

The frame storage shed housing maintenance equipment, was also enlarged by the addition of a six-foot extension, to provide sufficient storage space for the snow plows stationed at the Meacham Patrol.

Further details will be found on page 435 of the 1927-28 report.

Athena Patrol Headquarters

On the Oregon-Washington Highway at Athena, about 20 miles north of Pendleton.

The patrol headquarters established at Athena in 1926 has been improved during the 1929-30 biennium by the construction of a woven wire fence around the property, and by a few necessary changes in the doors of the equipment shed, and improvement to sidewalks. Expenditures during the past biennium have amounted to $1,596.57 from state funds.

Further details will be found on page 437 of the 1927-28 report.

Storage Building at Pendleton

On the Old Oregon Trail at the intersection of Court and River Streets in the city of Pendleton; 28 by 160-foot standard frame maintenance storage building.

Contract No. 1136, awarded October 30, 1929, to R. H. Jones, of Baker, Oregon. Work commenced November 18, 1929; completed March 29, 1930. Final cost, $8,283.69. Resident Engineer, M. Stephenson.

The long-felt need of an office and storage building at Pendleton has been fulfilled during the biennium by the acquisition of a patrol site situated in blocks 19, 20 and 21 in Byers Park Addition to Pendleton. The north and south streets between the blocks were vacated by the city of Pendleton.

A service building was constructed on the site containing office space for the Resident Maintenance Engineer, and a shop and storage space for maintenance equipment. The property has been enclosed by the construction of a woven-wire fence, and the grounds have been improved by leveling up and the planting of a small amount of shrubbery.

A statement of the construction and costs of the service building is given in a separate article in this report.

The patrol site is under the supervision of C. E. Carter, Resident Maintenance Engineer at Pendleton.

Albee Timber Reserve

On the Pendleton-John Day Highway, 21 miles south of Pilot Rock.

In the vicinity of Albee a tract of land containing a beautiful stand of pine timber was acquired from Fred W. Falconer for the purpose of preserving the natural beauty of the country adjacent to the highway. The property has been developed by the construction of a drinking fountain, the water being supplied by a spring, and a minor amount of clearing away underbrush and dead trees has been done. Expenditures from state funds to date have amounted to $6,366.80.

McKay Creek-Pendleton Survey

With a view to improving the Oregon-Washington Highway between Mile Point 99.6 and the city limits of Pendleton, Oregon, a survey was made of this section during the spring and summer of 1929. The survey was made under the supervision of C. E. Carter, Resident Maintenance Engineer at Pendleton, and the work was carried on only at such times as the survey party could be spared from other work.

The survey follows the existing center line for the major part of the distance as the contemplated improvements are to consist of grade raising and stabilizing to a large extent. A few line changes were made, however, between Mile Points 106.3 and 107.0, where the existing alignment is not up to present day standards, this section having been originally constructed by Umatilla County forces in the early stages of state highway improvements.

Pendleton-Washington State Line Right-of-Way

On the Oregon-Washington Highway, from the north city limits of Pendleton to the Oregon-Washington boundary line; 36.63 miles of extra right-of-way acquisition.

The original right-of-way secured at the time of the original construction of this section proved to be inadequate for proper widening of the roadbed. Additional widths are being acquired as necessitated, the negotiations being handled by C. E. Carter, Resident Engineer at Pendleton. Expenditures to date have amounted to $321.40 from state funds.

Nelson Canyon Construction Engineering

This prefix was assigned to handle the engineering costs on approximately 0.83 mile of grading on the Nelson Canyon section of the Pendleton-Cold Springs Highway. The grading was performed by Umatilla County forces and financed from Umatilla County road funds.

The engineering work was done under the supervision of Resident Engineer W. W. Stiffler, and the amount expended to date for engineering is $708.53.

Umatilla-Washington State Line Survey

This survey is over the route commonly called the "Wallula Cut-off" which connects the highway systems of Eastern Oregon and Washington. The location survey starts from the Columbia River Highway at Umatilla, and after crossing a sandy and rocky table land, enters that stupendous gorge of the Columbia known as "Wallula Gap." A connection is made with the Pendleton-Cold Springs Highway near Cold Springs. The end of the survey is at the Oregon-Washington State Line about six miles west of the town of Wallula. The Washington Highway Department had already finished the survey from the State Line to Wallula. This highway has been designated as the Umatilla Cut-off on the state highway system.

A reconnaissance survey was also made to determine the desirability of an alternate route starting at Messner, passing through Hermiston and joining the other survey at Cold Springs. As many questions of future policy were involved, this reconnaissance was very extensive, extending over a wide belt from Pendleton to Messner.

The surveys were made during the spring of 1930 under the direction of Resident Engineer J. B. Weaver. The length of the line as located between Umatilla and the Washington State Line is 19.7 miles.

Umatilla-Hermiston Survey

The need of reconstructing the Old Oregon Trail between Umatilla and Hermiston in the near future being apparent, a survey of this section was made during June, 1930, by a survey party under the supervision of J. B. Weaver, Resident Engineer. The route of the survey is common with the route of the survey as originally constructed and the betterment work will consist principally of widening and grade raising.

UNION COUNTY

Union County is served by two state highways, the Old Oregon Trail and Wallowa Lake Highway, both of which were completed in previous years. However, due to the increased traffic of late years on the Old Oregon Trail, the need of improvement on this highway had become imperative and, accordingly, during the past biennium, several sections were improved. The project of major importance was the regrading and resurfacing of the Kamela-Hilgard section. This section was widened to a minimum width of 28 feet and surfaced with crushed rock to a width of 20 feet. A material betterment was made in alignment, curvature being reduced through the section to a marked extent.

Other improvement projects during the biennium were the widening and shoulder surfacing of the La Grande-Hot Lake section, the widening of the La Grande-Perry section and the resurfacing of the Hilgard-La Grande section. A new bridge was constructed across the Grande Ronde River near Hilgard. The new bridge site which affords excellent alignment and grade is located several hundred feet downstream from the former bridge, an old county bridge which has been in use for years.

H. G. Smith, Division Engineer at La Grande, has general supervision over all state highway work in the county.

Kamela-Hilgard Resurfacing

Federal Aid Project Nos. 62-A and 139-B

On the Old Oregon Trail from Mile Point 265.8, which point is about 2 miles northwest of Kamela, to Mile Point 280.6, which point is at the west end of the Hilgard overcrossing about six miles west of La Grande; 14.53 miles of broken stone surfacing 20 feet wide and 9 inches in compacted thickness, consisting of 5 inches of 3½ to 2½-inch broken stone, 3 inches of 2½ to 1-inch broken stone and one inch of 1-inch-minus material.

Contract No. 1156, awarded February 27, 1930, to Homer G. Johnson, of Roseburg, Oregon. Work commenced April 14, 1930. Estimated cost, $133,000, consisting of $73,395.76 from state funds and $29,920.84 from government funds. Expenditures to date have amounted to $41,695.24 from state funds and $5,719.38 from government funds. Resident Engineer, Jos. G. Toole.

The specifications for this project provided for a type of surfacing which has been generally known and called waterbound macadam. In order to take advantage of modern equipment, however, some alterations in the method of construction were provided, the main features being the spreading and shaping of the coarse materials by power graders, and the use of spreader boxes for the even distribution of the surfacing materials.

The general method of construction was as follows: After each layer of coarse material had been bladed to a smooth surface, it was keyed and bound with key rock and rock screenings. This was accomplished by spreading the finer materials in thin layers over the coarse materials and working the fines into the voids in the coarse materials by means of brooms, rolling and sprinkling. Of interest is the exceptionally smooth surface secured.

The contractor used considerable time in getting the work under way, but after he became accustomed to this type of construction, he maintained a large daily output of materials, producing between 600 and 800 yards per 24 hours.

The surfacing materials were secured from two state-owned quarries, both well situated from a haul standpoint, and the material produced was of very good quality.

Lone Pine-Hot Lake Bituminous Macadam

On the Old Oregon Trail from Mile Point 292.7 at Lone Pine to Mile Point 293.6, one mile southeast of Lone Pine; 0.9 mile of bituminous macadam wearing surface, 18 feet wide and 2 inches in compacted thickness.

Work commenced June 6, 1930; completed June 12, 1930. Final cost, $3,253.68 from state funds. Resident Engineer, W. C. Williams.

This 0.9-mile section, resurfaced in the fall of 1929, was surfaced with a bituminous macadam wearing surface by state oiling crew No. 1, Roland Hopper, foreman. The crushed gravel used in the construction was secured from a commercial plant at Island City.

Hilgard-La Grande Resurfacing

Federal Aid Project No. 139-A

On the Old Oregon Trail from Mile Point 280.6, which point is at the east end of the Hilgard Overcrossing, to Mile Point 287.012, which point is at the west end of Adams Avenue in La Grande; 6.41 miles of broken stone resurfacing 18 feet wide and approximately 9 inches in thickness.

Contract No. 1065, awarded January 29, 1929, to Clyde R. Seitz, of La Grande, Oregon. Work commenced October 16, 1929. Estimated cost, $45,000, consisting of $21,940.60 from state funds and $23,059.40 from government funds. Expenditures to date are $16,906.90 from state funds and $20,463.52 from government funds. Resident Engineers, W. W. Stiffler and Jos. G. Toole, successively.

The contract as awarded on the section specified the furnishing of maintenance material for oiling work, and the resurfacing of 1.6 miles at intermittent points only. During the spring thaw of 1929 the entire section showed signs of failure indicating the necessity of a complete resurface. A supplementary contract was entered into with the contractor covering an additional 4.6 miles of resurfacing work. A later supplementary contract between the city of La Grande, the State Highway Commission and the contractor, specified the resurfacing of 0.265 mile of the Old Oregon Trail within the corporate city limits of La Grande, Mile Point 286.734 to Mile Point 287.012, which work was financed by the city of La Grande.

The rock for the resurfacing work and maintenance materials was secured from a rock point near Perry, the quarry being worked in such a manner that a cut is being made through the rock point, through which the highway will be routed, eliminating a very dangerous curve which now exists around this point.

Kamela-Hilgard Regrading

Federal Aid Project Nos. 62 and 139-B

On the Old Oregon Trail from Mile Point 265.8, which point is about two miles northwest of Kamela, to Mile Point 280.6, which point is at the west end of the Hilgard Overcrossing, about six miles west of La Grande; 14.53 miles of regrading, 28-foot roadbed.

Contract No. 1120, awarded August 29, 1929, to E. L. Gates, of South Beach, Oregon. Work commenced October 3, 1929; completed September 23, 1930. Estimated cost, $225,000, consisting of $106,842.60 from state funds and $118,157.40 from government funds. Expenditures to date have amounted to $107,761.83 from state funds and $88,365.57 from government funds. Resident Engineers, W. W. Stiffler and Jos. G. Toole, successively.

Regrading work on this section, begun in October, 1929, was carried on during the winter of 1929-30. The contractor using a day and night shift completed the work in September, 1930, which was well in advance of the rainy season. The grading work during the winter of 1929-30 was confined to those portions which did not molest the original surface in order that traffic would not be inconvenienced during the wet weather season. Careful blasting of the rock cuts was necessary due to the close proximity of the tracks of the Union Pacific Railroad, as well as the necessity of allowing traffic to flow unhampered. This phase of the work was handled very ably by the contractor, and all the work in general was well planned and executed.

The regrading of this section completes the widening of the Old Oregon Trail between Hilgard and a point about 10 miles east of Pendleton.

La Grande-Hot Lake Widening

Federal Aid Project No. 139-C

On the Old Oregon Trail from east city limits of La Grande to O.-W. R. & N. Co. Overcrossing at Hot Lake; 7.96 miles of grade widening and gravel shoulder construction. Roadbed widened to 28 feet, and present 16 to 18-foot surface widened to 24 feet by addition of gravel shoulders 3 to 4 feet wide and 9 inches in compacted thickness.

Contract No. 1203, awarded July 8, 1930, to the Union Construction Company, of Portland, Oregon. Work commenced August 5, 1930. Estimated cost, $47,000, consisting of $18,785.05 from state funds and $28,214.95 from government funds. Expenditures to date, $10,833.68 from state funds. Resident Engineer, W. C. Williams.

The width of the roadway on this section, as originally constructed, being no longer adequate to safely carry the increased traffic, a contract for widening of the section was awarded in July, 1930. The contractor started work immediately and completed the grade widening in September, doing the work with a drag line and trucks. Construction of the gravel shoulders began in September, this work being sublet to Hart Bros. of La Grande, Oregon. The material used for shoulder material was pit-run gravel secured from a state-leased gravel pit about two miles south of Lone Pine.

Grande Ronde River Bridge

Federal Aid Project No. 139-B

On the Old Oregon Trail near Hilgard; six 50-foot continuous concrete spans, with 24-foot clear roadway.

Contract No. 1160, awarded February 27, 1930, to O. N. Pierce, of Portland, Oregon. Work commenced March 24, 1930; completed September 10, 1930. Estimated cost, $31,000, consisting of $12,716.21 from state funds and $18,283.79 from government funds. To date there has been expended $13,356.52 from state funds and $7,147.36 from government funds. Resident Engineer, C. K. Hubbard.

This bridge will replace a light steel truss which was part of the old county road. The alignment of the old bridge made a serious traffic hazard. All work on this project is complete but final settlement has not been made.

La Grande Office Site

On the Old Oregon Trail at the east city limits of La Grande, Oregon.

The yards surrounding the Division Office Building at La Grande, constructed in 1928, have been improved by the installation of an underground sprinkling system and the seeding of a lawn. Other charges in connection with the installation of the water system have been carried over from the 1927-28 biennium. Expenditures for the past two years have amounted to $3,287.57.

Further details will be found on page 439 of the 1927-28 report.

Maintenance

In Union County a total of 83.49 miles of state highway has been maintained throughout the 1929-30 biennium. This mileage consists of 5.34 miles of asphaltic concrete pavement, 1.02 miles of bituminous macadam, 43.19 miles of oil treated macadam on the Old Oregon Trail, 1.99 miles of asphaltic concrete, 5.45 miles of bituminous macadam, 12.47 miles of oil treated macadam, and 14.08 miles of untreated macadam on the Wallowa Lake Highway.

In addition to the routine maintenance necessary to maintain the highways in proper condition, considerable minor betterment work has been performed by extra gangs under special foremen. This betterment work has consisted largely of stabilizing weak points in the subgrades by addition of gravel, ditching to provide better drainage, widening of sharp curves, placing of drain tile in low swampy localities and other work of similar nature.

During the biennium no snow blockades have been experienced on the state highways within the county, and the highways generally have been in very good shape at all times. Maintenance operations have been performed by patrolmen working out of headquarters which are established at La Grande, Minam, Union and Meacham. Oscar Cutler was in charge of maintenance work in the county prior to September 1, 1929. Subsequent to that date the work has been under the supervision of W. C. Williams.

There has been expended during the biennium for general maintenance in the county, the amount of $214,677.96 and for minor betterment work, $36,589.93.

La Grande-Baker Maintenance Materials

On the Old Oregon Trail from La Grande to Baker; 48 miles of maintenance materials in stockpiles.

Contract No. 947, awarded March 3, 1927, to H. J. Hildeburn, of Portland, Oregon. Work commenced July 27, 1927; completed August 28, 1928. Final cost, $59,756.65. Resident Engineer, J. N. Bishop.

This project was completed in the previous biennium and a descriptive article will be found on page 441 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 2,017.75
Purchase of gravel pits		920.60
Lease of stock pile sites		399.61
Preparation of stock pile sites		101.69
Credit for crushed rock sold	Cr.	7.00
Contract items as follows:		
Grade "A" materials in stock pile, 5,791.2 cu. yds. at $2.55	$ 14,767.56	
Grade "B" materials in stock pile, 6,349.3 cu. yds. at $1.95	12,381.14	
Grade "C" materials in stock pile, 4,738.1 cu. yds. at $2.15	10,186.92	
Grade "D" materials in stock pile, 6,852.0 cu. yds. at $1.75	11,991.00	
Grade "E" materials in stock pile, 479.5 cu. yds. at $1.75	839.13	
Grade "X" materials in stock pile, 167.1 cu. yds. at $2.00	334.20	
Grade "F" materials in stock pile, 3,792.8 cu. yds. at $1.75	6,637.40	
Grade "A" materials in trucks, 105.3 cu. yds. at $1.75	184.28	
Grade "B" materials in trucks, 75.7 cu. yds. at $1.50	113.55	
Grade "C" materials in trucks, 93.0 cu. yds. at $1.60	148.80	
Force account items:		
Preparation of stock pile sites	134.46	
Digging test pits for gravel	24.74	
Total amount earned by contractor	$ 57,743.18	
Deduction for haul adjustment	1,419.18	
Total amount paid to contractor		56,324.00
Grand total cost of project, all state funds		$ 59,756.65

SEGREGATION OF FUNDS

Expended 1927-28 biennium	$ 55,539.94
Expended 1929-30 biennium	4,216.71
Total of expenditures	$ 59,756.65

La Grande-Hot Lake Survey

Preliminary to the widening of this section, a survey was made to determine costs of the work, and to secure the data necessary to the calling of bids for the widening work. The line as surveyed eliminates the curves around the railroad spur at Lone Pine.

The field work in connection with the survey was carried on during November and December, 1929, under the supervision of Resident Engineer W. C. Williams.

Umatilla County Line-Hilgard Survey

This survey as made in 1927 consisted of a preliminary line and a paper projection. The survey work performed during July, 1929, under the supervision of Resident Engineer W. C. Williams, consisted principally in staking the projected line in the field preliminary to calling for bids on the regrading work. Further details will be found on page 443 of the 1927-28 report.

La Grande Patrol Headquarters

On the Old Oregon Trail at the corner of Adams Avenue and Willow Street at the east city limits of La Grande; 48 by 144-foot standard frame maintenance storage building.

Contract No. 1081, awarded March 8, 1919, to J. Gietlhuber, of Baker, Oregon. Work commenced April 1, 1929; completed June 26, 1929. Final cost, $11,167.40. Resident Engineer, M. Stephenson.

The service building constructed on the La Grande Patrol Site in 1929 has been improved by the installation of steam heat in the storage space. Snow-removal equipment stored in the building is subject to use at all times, and the lack of heat in the building was a serious detriment to starting the motors in sub-zero weather. A concrete floor was also constructed in the storage room, and a drainage system installed to provide for the removal of water resulting from the melting of snow and ice which often covers equipment returning from snow-removal operations.

La Grande-Hot Lake Right-of-Way

On the Old Oregon Trail from a point about one mile east of the city limits of La Grande to Hot Lake; 7.0 miles of extra width right-of-way. Resident Engineer, W. C. Williams.

Acquisition of this extra right-of-way has been completed during the current biennium. The extra right-of-way acquired is of varying widths from 10 to 70 feet. At points where trouble has been encountered by drifting snow, a 70-foot strip was acquired, giving sufficient width upon which to erect snow fences. At other points where no snowdrifts have occurred, a strip of only 10 feet was acquired from which to secure material for widening. Expenditures during the past biennium have amounted to $831.88.

Further details will be found on page 442 of the 1927-28 report.

Blue Mountain Timber Preserve

On the Old Oregon Trail from the Umatilla County line to Hilgard.

A small amount of clearing away of dead trees and underbrush has been done during the current biennium. As in the past, a one-man fire patrol has been maintained during the fire season and very good results have been obtained. No fires have occurred, although the fire patrolmen found and extinguished many camp fires left alive by careless campers. Expenditures during the past biennium have amounted to $702.94 from state funds.

Further details will be found on page 443 of the 1927-28 report.

Kamela-Hilgard Right-of-Way

On the Old Oregon Trail from Kamela to Hilgard; 12.0 miles of additional right-of-way acquisition at intermittent sections. Resident Engineers, Oscar Cutler and W. W. Stiffler.

In the regrading of the Kamela-Hilgard section it was found necessary to acquire additional right-of-way to properly widen and straighten the original roadbed. All necessary tracts have been acquired and fences moved back to the new right-of-way line. Expenditures to date have amounted to $77.57.

WALLOWA COUNTY

Wallowa County, in which is situated the beautiful Wallowa Valley, for the possession of which that courageous Indian warrior, Chief Joseph, fought so long and valiantly, is served by two state highways. The Wallowa Lake Highway which connects with the Old Oregon Trail at La Grande and terminates at Joseph near the north end of Wallowa Lake, is the main artery of traffic, and in addition to its commercial value it is highly regarded as a recreational highway as it affords easy access to the picturesque lake and mountainous country of Wallowa County. The Enterprise-Flora Highway leads north from the Wallowa Lake Highway at Enterprise, to the north boundary of the county near Flora, and will, upon completion of a gap of approximately 20 miles of which about half is in Oregon and half in Washington, connect with an improved highway in Washington leading directly to Lewiston, Idaho, and Spokane, Washington.

Highway development in the county during the past biennium aside from maintenance, has consisted of the resurfacing and construction of a bituminous macadam wearing surface on the Lostine-Enterprise section of the Wallowa Highway, the construction of this bituminous macadam constituting the first section of oil-treated macadam in the county.

All state highway work in the county has been under the general direction of H. G. Smith, Division Engineer, with headquarters at La Grande.

Lostine-Enterprise Grading and Surfacing

Federal Aid Project No. 70

On the Wallowa Lake Highway, from a point approximately two miles east of Lostine, to Enterprise; 7.89 miles of grading and surfacing.

Contract No. 570, awarded July 26, 1922, to Wallowa County Court, of Wallowa County. Work commenced September 18, 1922. Completed November 17, 1923. Final cost, $116,797.60. Resident Engineer, Oscar Cutler.

This project was reopened to record a payment of $3,226.25 by the county on their portion of the cost. This makes a total of $40,228.11 paid by the county and leaves a balance of $14,847.29 to complete the county's share.

Further details will be found on page 445 of the 1927-28 report.

Lostine-Enterprise Bituminous Macadam

On the Wallowa Lake Highway, from Mile Point 58.77, about two miles east of Lostine, to Mile Point 66.47, which is in the town of Enterprise; 7.70 miles of bituminous macadam wearing surface 18 feet wide, 7.2 miles of which is 1½ inches in compacted thickness and 0.5 mile of of which is approximately 3⅓ inches in compacted thickness.

Work commenced August 25, 1930; completed September 9, 1930. Estimated cost, $17,500; expenditures to date have amounted to $8,464.94 from state funds. Resident Engineer, W. C. Williams.

This section was originally included in the La Grande Bituminous Macadam Project, for which all bids were rejected as being in excess of the engineer's estimate. The work was later performed by state forces, the oiling crew under Roland Hopper, foreman, completing the work at a cost approximately 74 per cent of the lowest bid submitted. A very smooth riding surface was obtained and the residents of Wallowa County are very appreciative of this section of bituminous macadam which is the only section of oiled road in the county.

Lostine-Enterprise Resurfacing

On the Wallowa Lake Highway, from Mile Point 58.8, which point is approximately two miles east of Lostine, to Mile Point 66.47, which point is in the town of Enterprise; 7.67 miles of broken stone surfacing 18 feet wide and 7 to 8 inches in compacted thickness, supplemented by Talus Rock shoulders 2 feet wide and 6 inches in depth.

Contract No. 1086, awarded March 29, 1929, to the Hart Construction Co., of Union, Oregon. Work commenced April 15, 1929; completed October 30, 1929. Final cost, $48,616.20. Resident Engineers, Oscar Cutler and W. C. Williams, successively.

This section of highway was originally surfaced in 1923 and the surface had become worn so thin that a resurface was necessary. The rock for resurfacing and maintenance materials was obtained from a state-owned quarry about 2 miles west of Enterprise, an exceptionally good grade of crushed rock being secured. A quantity of maintenance materials was stockpiled for use later in oiling work.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 2,210.98
Purchase of gravel pit		100.00
Lease of stock pile sites		150.00
Digging drainage ditches		7.50
Sprinkling surfacing materials		4,589.93
Preparing stock pile sites		178.00
Signs for traffic control		40.57
One hoe down fork deducted from contractor's estimate		1.88
Contract items as follows:		
Base course resurfacing, 14,745 cu. yds. at $1.11	$ 16,366.95	
Top course resurfacing, 4,377.5 cu. yds. at $1.18	5,165.45	
Grade "AB" materials in stock pile, 3,188.6 cu. yds. at $1.20	3,826.32	
Grade "C" materials in stock pile, 1,218.6 cu. yds. at $1.18	1,437.95	
Talus shoulder material, 3,335.5 cu. yds. at $0.40	1,334.20	
Earth filler, 6,365 cu. yds. at $0.25	1,591.25	
Hauling broken stone (truck measure), 46,001 yd. mi. at 17c	7,820.17	
Hauling broken stone (pile measure), 2,203.6 yd. mi. at 19c	418.68	
Hauling talus shoulder material, 4,679 yd. mi. at 17c	795.43	
Filler haul, 12,655.75 yd. mi. at 17c	2,151.48	
Hauling and piling screen rejections, 683.7 cu. yds. at 35c	239.30	
Force account for removing large rocks from filler material	192.04	
Total amount earned by contractor	$ 41,339.22	
Deduction for one hoe down fork with handle	1.88	
Total amount paid contractor		41,337.34
Grand total cost of project, all state funds, 1929-30		$ 48,616.20

Maintenance

At the close of the 1929-30 biennium there are 73.77 miles of state highways under maintenance in Wallowa County. This mileage consists entirely of untreated macadam with the exception of 7.7 miles which is bituminous macadam, and 0.85 mile of bituminous pavement.

No difficulties were encountered in the maintenance of the highways within the county during the biennium, the routine work being in direct charge of patrolmen stationed at Minam, Wallowa and Enterprise. A small amount of minor betterment was performed by an extra gang crew, this work consisting mainly of widening of blind curves, constructing drain ditches and installing drain tile at points affected by frost boils.

Maintenance work in Wallowa County has been under the supervision of Resident Maintenance Engineers Oscar Cutler and W. C. Williams successively, whose headquarters were at La Grande.

During the biennium, the expenditures in the county for general maintenance were $59,160.40 and for minor betterment work, $3,377.09.

Union County Line-Wallowa Lake Timber Reserve

On the Wallowa Lake Highway, from the Union County Line to Rock Creek, which is about four miles west of Wallowa; 10.0 miles of timber acquisition.

Resident Engineers, Oscar Cutler and W. C. Williams.

During the current biennium several additional tracts of timber have been acquired as a part of the reserve, and a continuous strip approximately seven miles in length is now owned by the state. About three miles of fence has been constructed as a part of the purchase agreement. Expenditures during the biennium have amounted to $2,003.75.

Further details will be found on page 448 of the 1927-28 report.

WASCO COUNTY

The highways in this county have been completed for several years and the principal work done during the past two years consisted of minor and major betterments. Contracts were let for the production of rock for the laying of a non-skid wearing surface on the pavement between Hood River and The Dalles. A contract was also awarded for crushed rock for bituminous macadam construction from The Dalles to the Deschutes River and five miles of bituminous macadam were laid on this section between Seufert and Dillon. The contract let in 1928, for the furnishing of maintenance and betterment materials from Mile Point 25 to Mile Point 65 on The Dalles-California Highway, was completed and a short section of 2.9 miles was resurfaced by state crews on this highway near Tygh Ridge.

A survey on the Columbia River from the east city limits of The Dalles to the Deschutes River was completed, it being planned to widen this section in 1931. A survey and plans were completed for the improvement and reconstruction of drainage ditches on the Sherman Highway.

All state highway work during the biennium was carried on under the supervision of C. W. Wanzer, Division Engineer, with headquarters at Bend.

The Dalles Oiling Project

Federal Aid Project No. 152-A

Section 1

On the Sherman Highway in Sherman County from Mile Point 15.3, near DeMoss Springs, south to Mile Point 49.3 near the Sherman-Wasco County line; 16.0 miles of bituminous macadam wearing surface and 5.6 miles of tar surface treatment.

Section 2

On The Dalles-California Highway in Wasco County from Mile Point 2.0, approximately two miles south of the junction with the Columbia River Highway, to Mile Point 71.5, near the Wasco-Jefferson County line; 17.7 miles of oil mat surface treatment.

Section 3

On the Columbia River Highway in Hood River and Wasco Counties, from Mile Point 43.42 at the Multnomah-Hood River County line to Mile Point 93.89, approximately two miles east of The Dalles; 76.24 miles of non-skid wearing surface.

Contract No. 1189, awarded April 24, 1930, to J. F. Forbes, of Olympia, Washington. Work commenced May 21, 1930. Estimated cost, $137,000. consisting of $111,720 from state funds and $25,580 from government funds. Expenditures to date have amounted to $77,645.37 from state funds. Resident Engineer, J. N. Bishop.

This contract provided for various oil treatments on the Sherman, The Dalles-California and the Columbia River Highways.

Considerable difficulty was encountered in getting this job started due to cold weather and the inexperience of the contractor's workmen. However all of the work on the Sherman and The Dalles-California Highways has been completed, and the non-skid wearing surface on the Columbia River Highway has been finished between Mile Points 43.42 and 68.02. The remaining work to be done on this project consists of completing the non-skid wearing surface treatment on the Columbia River Highway between Mile Points 68.02 and 93.89.

The Dalles-Deschutes River Bituminous Macadam Wearing Surface

Federal Aid Project No. 37

On the Columbia River Highway, from Mile Point 93.85, which is about 3 miles east of The Dalles, to Mile Point 98.98, which is about one-half mile west of the Dillon Overhead Crossing; 5.13 miles of bituminous macadam wearing surface, 18 feet in width.

Work commenced July 28, 1929; completed September 10, 1929. Final cost, $30,190.94 which has been expended from state funds but $18,000 of this amount, which is the government's share, will be refunded to the state from federal aid funds. Resident Engineer, K. D. Lytle.

As a great deal of trouble and expense had previously been encountered in maintaining the oiled macadam on the section of the Columia River Highway which extends from the end of the pavement east of The Dalles to the John Day River, a contract was awarded in January, 1929, for the production of rock to be used in constructing a bituminous macadam wearing surface. However, due to the slow progress made on the rock production project it has only been possible to construct a five-mile section of the contemplated work.

The work of constructing the bituminous macadam wearing surface on this five-mile section was performed by state forces, W. H. Stewart being the construction foreman in direct charge of the work. The first step of this work was to reduce the crown and, likewise, to produce extra strength at the edges of the original surface by spreading aggregate and heavy oil in wedge-shaped sections with the maximum thickness occurring at the edges of the original surfacing and tapering toward the center. After this phase of the work was completed, the main course of bituminous macadam wearing surface was laid. The resulting roadway has a crown of 2 inches and the average thickness of the bituminous macadam is 2¾ inches at the center of the road and four inches at the edges.

This work has proven very satisfactory and although the bituminous macadam has been completed and under traffic for more than a year no maintenance expense has been incurred on it.

Hood River-The Dalles Betterment Materials

On the Columbia River Highway, from Mile Point 66.80, which point is at the east end of the bridge across Hood River, to Mile Point 93.89, which point is at the end of the pavement, about three miles east of The Dalles.

Work on this project consisted of producing, hauling and stockpiling approximately 12,400 cubic yards of crushed rock for use in constructing non-skid wearing surface on asphaltic concrete pavement and for general maintenance purposes. Work commenced September 15, 1929, under the supervision of Resident Engineer K. D. Lytle, who was later succeeded by C. C. Slavens.

Under an agreement with Wasco County, it having a crushing plant established at Mile Point 76.2 and thus making an economical arrangement possible, the material was furnished from the county plant for $1.40 per cubic yard. The plant was later moved to a state-owned quarry site located near Mile Point 87.7 for the completion of the work under the project. Under the agreement, county forces likewise did the hauling and stockpiling of the materials for $0.15 per cubic yard mile.

The county forces, under the supervision of Mr. Christ Fauerso, county roadmaster, cooperated in every way toward turning out a good job and the material produced was clean and well graded.

The estimated cost of the project is $25,000 from state funds. Expenditures to date, have amounted to $16,444.11.

Wapinitia-Maupin Junction Grading

Federal Aid Project No. 163-A

On the Wapinitia Highway, from Sta. 1390+42.3, which station is about 1 mile north of Wapinitia to Sta. 1782+25.5, which station is at the junction of the Wapinitia Highway with The Dalles-California Highway, about 3 miles west of Maupin; 7.4 miles of grading. Roadbed 28 feet in width.

Contract No. 1204, awarded June 26, 1930, to Barnet & Mitchell, of Kent, Oregon. Work commenced July 9, 1930; estimated cost, $41,000, consisting of $16,482.96 from state funds and $24,517.04 from government funds. Expenditures to date, $11,027.97 from state funds. Resident Engineer, C. C. Slavens.

This section was constructed on a new line, its improved alignment and reduction in distance of 0.75 miles being considered sufficiently important to warrant the abandonment of the plan of reconstructing the county road which had previously been built. A high standard was used and the grade was held high as there is only about 2 feet of dirt on top of a rock capping. In cuts, the ditches were all excavated to a depth of 3.5 feet below the grade of the road.

All of the right-of-way was purchased by the state, W. A. Langille acting as right-of-way agent. It varied in width from 100 to 150 feet. The state also built all the right-of-way fence.

Elk Creek Forest Road Grading

This project has been carried over from the last biennium and a descriptive article will be found on page 450 of the 1927-28 report. The project was completed during the 1929-30 biennium at a cost of $48,087.61, all government funds.

Further details will be found on page 450 of the 1927-28 report.

Deschutes River Bridge

Federal Aid Project No. 101-B

On The Dalles-California Highway at Maupin; one 200-foot steel truss and 625 lineal feet of concrete viaduct approach with 20-foot clear roadway.

Contract No. 1049, awarded August 14, 1928, to Kuckenberg-Wittman Company, of Portland, Oregon. Work commenced August 28, 1928. Completed October 20, 1929. Final cost, $103,930.17. Resident Engineer, Frank Moore.

This bridge was completed and opened to traffic during the summer of 1929. The new structure eliminated several dangerous curves at the ends of the old bridge. This project is completed but final settlement has not been made.

Further details will be found on page 449 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 6,465.79
Name plates		29.34
Crushed gravel aggregate		3,586.00
Constructing approach embankment		3,204.22
Foundation investigation		16.88
Contract items as follows:		
Excavation, 1,251 cu. yds. at $5.00	$ 6,255.00	
Class "A" concrete, 1,040.1 cu. yds. at $21.00	21,842.10	
Class "B" concrete, 230.27 cu. yds. at $17.00	3,914.59	
Class "D" concrete, 634.9 cu. yds. at $21.00	13,332.90	
Reinforcing metal, 329,885 lbs. at 4½c	14,844.83	
Structural steel, 300,252 lbs. at 6½c	19,516.38	
Concrete handrail, 1,667 lin. ft. at $5.00	8,335.00	
Removal of old bridge, lump sum	3,000.00	
Force account items:		
Special copper hinges in bents 6 and 7	407.85	
Scuppers in approach span	29.84	
Total amount earned by contractor	$ 91,478.49	
Deductions:		
Cement adjustment, 222.75 bbls. at $2.70	601.43	
Final estimate in process of payment	249.12	
Total amount paid to contractor		90,627.94
Grand total cost of structure		$103,930.17

PARTICIPATION IN COST

	State	*County*	*Government*	*Total*
Expended 1927-28 biennium	$ 12,557.43	$ 8,487.25	$	$ 21,044.68
Expended 1929-30 biennium	Cr. 16,052.63	38,744.28	60,193.84	82,885.49
Total of expenditures	Cr.$ 3,495.20	$ 47,231.53	$ 60,193.84	$103,930.17

Summit-Pole Hill Forest Road Surfacing

The final contract to complete the grading and surfacing of the Wapinitia Highway from the Mt. Hood Highway Junction to Wapinitia was let by the Bureau of Public Roads to R. E. Harness, of Burns, Oregon, on June 11, 1929. This contract covered the surfacing of a section beginning 7.5 miles from the Mt. Hood Highway Junction and extending thence easterly 13.67 miles. Due to the short working seasons, the contract was not entirely completed at the date of this report. It is expected that the contract will be finished, however, by November 1, 1930.

The estimated final cost is $98,300. There has been expended to date a total of $80,453.74 from government funds.

Maintenance

There are 130.81 miles of state highways under maintenance in this county, which are classified as follows: Asphaltic concrete 21.18 miles, bituminous macadam 8.33 miles; oiled macadam 79.01 miles, and untreated macadam 22.29 miles.

The maintenance work on the Columbia River Highway is heavy, due to the nature of the country traversed. This road, for the most part, was built at the foot of steep hills, and is subject to the occurrence of many slides. In February, 1930, a slide occuring at the west portal of the Mosier tunnel blocked the road for five days. After the road was opened, considerable additional rock was shot down from the face of the cliff and the department does not anticipate having as much trouble at this point as it has had in former years. Several talus slopes were excavated back so that rocks would not continue to roll down upon the pavement. A paving plant was set up at Hood River and Mosier in 1930 and the pavement between Hood River and The Dalles was patched preparatory to putting on a non-skid covering in 1931. In 1929 the pavement east of The Dalles was virtually resurfaced, a total of 1,200 tons of bituminous mix being used on this two-mile section.

Besides the pavement patching and removal of slides above mentioned, routine work by maintenance crews each year consisted of painting traffic strips on all dangerous curves, repairing guard rails, blading rock shoulders, cutting brush and removing snow.

On The Dalles-California and Sherman Highways it is not necessary to carry on maintenance work so intensively due to the difference in the nature of the country traversed and the smaller volume of traffic. In 1929 a heavy coat of 95 per cent oil was put down on The Dalles-California Highway from Dufur to the Jefferson County Line and this section is now in excellent condition.

During the biennium, all maintenance work in the county was supervised by K. D. Lytle and J. N. Bishop, successive Resident Maintenance Engineers, with headquarters at The Dalles.

The total amount expended for general maintenance for the two-year period was $153,270.46 and for minor betterment work, $58,759.08.

[WASCO]

Dufur-Cow Canyon Junction Maintenance Materials

On The Dalles-California Highway, from Mile Point 25.0, which Mile Point is approximately 8 miles south of Dufur to Mile Point 65.0, which Mile Point is approximately 20 miles south of Maupin; producing and stockpiling 25,000 cubic yards of broken stone for maintenance purposes.

Contract No. 1020, awarded November 29, 1927, to J. W. & J. R. Hillstrom, of Marshfield, Oregon. Work commenced March 12, 1928; completed December 6, 1928. Final cost, $37,375.69. Resident Engineer, A. A. Kirkwood.

All of the rock furnished under this contract was taken from three quarries, one located 300 feet south of Mile Point 32.5, one 1,500 feet northeast of Mile Point 45.9 and one 100 feet east of Mile Point 56.0. The first two were purchased by the state and the last one was furnished by the contractor.

Under a supplemental agreement with the contractor the quantity of Grade "C" materials stipulated in the contract was increased approximately 5,000 cubic yards and approximately 2,400 cubic yards of 2½-inch, ⅛-inch material was stockpiled at the Maupin bridge site for use in constructing the concrete bridge across the Deschutes River at that point.

Further details will be found on page 451 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering			$ 3,230.12
Purchase of quarry site			220.50
Lease of stock pile sites			133.60
Signs for traffic control			29.45
Preparing stock pile sites			58.80
Credit for surfacing materials for Maupin Bridge approaches	Cr.		954.10
Credit for aggregate stockpiled for bridge at Maupin	Cr.		3,586.00
Credit for material stockpiled for betterment work	Cr.		11,055.00
Credit for rock furnished to town of Maupin for oiling street	Cr.		95.00
Contract items as follows:			
Grade "A" materials in stock pile, 7,411.6 cu. yds. at $1.70		$ 12,599.72	
Grade "B" materials in stock pile, 10,620.5 cu. yds. at $1.70		18,054.85	
Grade "C" materials in stock pile, 8,176.1 cu. yds. at $1.52		12,427.67	
Grade "C" materials in stock pile (extra), 1,000.0 cu. yds. at $1.52		1,520.00	
Grade "A" materials in trucks, 426.5 cu. yds. at $1.15		490.48	
Grade "B" materials in trucks, 296 cu. yds. at $1.15		340.40	
Grade "C" materials in trucks, 98 cu. yds. at $0.97		95.06	
Truck haul, 1,936 yd. mi. at 18c		348.48	
2½-inch rock on bridge approach road, 627.7 cu. yds. at $1.52		954.10	
2½-inch rock in stock pile at bridge, 1,793 cu. yds. at $2.00		3,586.00	
Force account for preparing stock pile sites		125.16	
Total amount earned by contractor		$ 50,541.92	
Deduction for haul adjustment		1,148.60	
Total amount paid contractor			49,393.32
Grand total cost of project, all state funds			$ 37,375.69

SEGREGATION OF FUNDS

Expended 1927-28 biennium	$ 18,316.59
Expended 1929-30 biennium	19,059.10
Total of expenditures	$ 37,375.69

DETAIL OF BETTERMENT ITEMS TRANSFERRED

Grade "A" maintenance materials, 1,200 cu. yds. at $1.70	$ 2,040.00
Grade "B" maintenance materials, 1,200 cu. yds. at $1.70	2,040.00
Grade "C" maintenance materials, 4,588.82 cu. yds. at $1.52	6,975.00
	$ 11,055.00

Tygh Ridge Section Resurfacing and Drainage

On The Dalles-California Highway, from Mile Point 25.9, which point is located about one mile north of the Tygh Ridge Summit to Mile Point 28.4, which point is located about 1.4 miles south of the Tygh Ridge Summit, and from Mile Point 34.2 to 34.6, which section is just north of Tygh Creek in Tygh Valley.

Work commenced April 1, 1930; final cost, $16,390.76 from state funds. Resident Engineers, K. D. Lytle and J. N. Bishop.

Due to lack of sufficient surfacing materials on the road and poor drainage conditions, the two sections above referred to were rough and required a great amount of maintenance. To remedy this situation, the existing surfacing was scarified and laid over on the shoulders. Uncrushed quarry rock was then placed on the subgrade at the rate of 3,000 cubic yards per mile. This rock was covered with a dirt filler, the old surfacing material being then pulled back on top and an additional 150 cubic yards per mile of new 1¼-inch–¾-inch rock added. This new rock and old surfacing was then watered and bladed until the surface was firm and smooth.

A power shovel was then used to clean out the ditches and the material thus obtained was used to build up the shoulders alongside the surfacing. All work was done by state forces with W. H. Stewart, Foreman, in direct charge of this work.

The Dalles-Biggs Survey

This is primarily a widening survey to determine the cost of widening the roadway to modern standards, preparatory to the construction of a bituminous macadam pavement. Several changes both in alignment and grade have been planned. The most important of these is at the Dillon Over-crossing.

The survey is being made under the direction of J. N. Bishop, Resident Maintenance Engineer, The Dalles, Oregon.

Sherman County Line to The Dalles-California Highway Survey

A survey was made on the Sherman Highway from the Sherman County line to the junction with The Dalles-California Highway 22 miles south of Maupin in order to prepare plans for drainage ditches along the upper side of the present road. Previously a great deal of trouble has been experienced on this section in keeping the water from seeping along on top of the rock strata and under the road, which softened the roadbed so that the surfacing broke through.

To remedy this condition, ditches were located the entire length of the road except in places where the present fills were 3.5 feet or over in height. The material taken from the ditches will be used in widening the roadbed. In several places short line changes were made to eliminate or reduce curvature. The survey embraced a total of 19.8 miles of line, and was under the supervision of Resident Engineer Forrest Cooper.

Sherman Highway Junction-Cow Canyon Survey

On The Dalles-California Highway from the Sherman Highway Junction, southerly for approximately 3 miles, the present grade line follows closely the adjacent ground level, and the rock strata lies only a foot or so below the top of the road. A survey was completed in September, 1930, under the supervision of Resident Engineer Forrest Cooper for the purpose of preparing plans for drainage ditches along this section of the highway. It was planned to cut the ditches through the rock and lower the water table. The material taken from the ditches will be used to widen the roadbed.

Wapinitia-Maupin Junction Survey

The location survey of the Wapinitia-Maupin Junction Section of the Wapinitia Highway was made after a thorough investigation of the feasibility of a more direct route connecting the Bear Springs-Wapinitia Section with The Dalles-California Highway, in place of the Wapinitia Market Road that has served as a connecting link in the past.

The final decision was to connect the above named termini with a direct tangent. This eliminated the several curves that marked the course of the market road and shortened the distance some 0.7 miles.

The investigations and the surveys were made during December, 1929, and January, 1930, under the direction of K. D. Lytle, Resident Maintenance Engineer, stationed at The Dalles, Oregon.

WASHINGTON COUNTY

Major betterment work which, as during the preceding biennium, has constituted all of the state highway work in the way of construction in Washington county, has been continued both by the paving of the Sylvan-Beaverton section of the Tualatin Valley Highway and by a widening and shoulder construction project on the West Side Pacific Highway between the Multnomah County line and Middleton. Considerable discussion has been had relative to a proposed project for a super-highway from Portland to Hillsboro. Parties interested in the development of this project have urged it upon the commission and have secured a large number of options covering necessary rights of way on the basis of 100 feet width. No action has been taken by the commission in the matter, however; and with the route of the so-called Short Road to the Coast—which seems to be one of the probable future developments of the highway system in Washington county—as yet undetermined; and in view of the fact that any super-highway to be laid out between Portland and Hillsboro or that vicinity should unquestionably be so located as to become a part of the so-called Short Road to the Coast, it seems certain that no action will be taken by the commission unless and until it is done as a part of the short-road project.

Linked with this matter there is also a demand being agitated by parties interested in the improvement of the present Tualatin Valley Highway between Beaverton and Hillsboro for a widening of that section on the same standards that have been used on the Canyon Road section.

A reconnaissance survey of the several proposed routes for the short road from Portland to the coast is under way as this biennium ends. Investigation is being made of all routes which have been suggested by various individuals and communities interested in the construction of such a road, and of any and all other routes which may develop as possibilities and as a result of the reconnaissance.

All matters of state highway work in Washington county have been under the supervision of W. D. Clarke, Division Engineer, with headquarters at Salem.

Beaverton-Multnomah County Line Paving

On the Tualatin Valley Highway, from Sta. 205+48, which station is about 1,000 feet west of the county road known as Cedar Street, in Beaverton, and about 600 feet east of the corporate limit of Beaverton, east to the Multnomah-Washington County Line; 3.90 miles of Portland cement concrete pavement.

Contract No. 1145, awarded January 16, 1930, to I. L. Young, of Portland, Oregon. Work commenced May 5, 1930. Estimated cost, $120,000 from state funds; expenditures to date, $88,831.77. Resident Engineer, F. T. Young.

Paving of the Sylvan-Beaverton section, which was originally planned for the season of 1929, was later postponed until 1930, in view of the fact that the Multnomah county section of this highway was similarly postponed. The contract let in January, 1930, is practically complete as the biennium ends. The project consists of a standard 20-foot concrete pavement, 7 inches thick in the center, tapering in the outside 3 feet to 9 inches at the edges; longitudinal center joint constructed with metal strip forming a tongue-and-groove connection between the two halves of the pavement; 60-foot panels between expansion joints, with dummy contraction joints at the intermediate 20-foot points; five ½-inch tie-bars to each 20-foot panel through the longitudinal joint and four ¾-inch dowels through each expansion and contraction joint, with metal sleeves in the panel on one side of the joint and imbedded in the concrete of the other panel.

In view of the fact that the Multnomah County section has been constructed as a four-lane road and that the increase in traffic over this highway is expected to require the construction of additional traffic lanes on the Slyvan-Beaverton section in the not distant future, definite provisions for such further pavement have been made by constructing the outer edges of the present pavement to form the tongue half of the future tongue-and-groove connection, and with the tie-bars already in place. Rock shoulders 6 feet in width and 6 inches compacted thickness are being constructed on each side of the pavement. Through the city of Beaverton the roadbed has been graded to a street section allowing for regulation sidewalks and curbs to be constructed by the property owners.

The cement used on this contract was Oregon made, and the aggregate was gravel from the Clackamas river at Gladstone.

Hillsboro-East Non-skid Surfacing

On the Tualatin Highway, from the east edge of Hillsboro at Mile Point 16.41 to Mile Point 15.85; 0.56 miles of non-skid surfacing placed on broken cement concrete. Work performed during August, 1930, by state oiling crew under Foreman O. C. Yocum. The rock was stockpiled for this work under unit 1 of the Willamette Valley Rock Production contract.

Estimated cost, $1,300. Expended to date, $886.73 from state funds. Resident Engineer, F. D. Eason.

Hillsboro-Forest Grove Non-skid Surfacing

On the Tualatin Highway, from the west city limits of Hillsboro at Mile Point 18.23 to the east end of the Dairy Creek fill at Mile Point 18.86, and from the west end of the Dairy Creek fill at Mile Point 19.16 to the end of the concrete pavement at Cornelius at Mile Point 21.0, and from the west end of the concrete pavement at Mile Point 21.40 to the east city limits of Forest Grove at Mile Point 23.24; 4.31 miles of non-skid surfacing of asphaltic concrete pavement. Work performed by state oiling crew under Foreman O. C. Yocum during August, 1930. The rock for this project was furnished under unit 1 of the Willamette Valley Rock Production contract.

Total expenditures to date have amounted to $7,051.71 from state funds. Resident Engineer, F. D. Eason.

Multnomah County Line-Middleton Widening and Surfacing

Federal Aid Project No. 73

On the West Side Pacific Highway, from Sta. 0+00, which station is at the Washington-Multnomah County Line, south to Sta. 498+00, which station is at Middleton, about 5 miles north of Newberg; 9.30 miles of widening the roadbed of the existing highway to a uniform width of 36 feet, and providing the existing pavement with new and wider rock shoulders.

Contract No. 1207 awarded July 8, 1930, to J. A. Lyons, of Portland, Oregon. Work commenced June 29, 1930; completed November 30, 1930. Estimated cost, $129,000, consisting of $83,750.31 from state funds and $45,249.69 from government funds. Expenditures to date have amounted to $36,040, from state funds. Resident Engineer, F. T. Young.

In connection with the construction of embankment approaches to the new Tualatin River bridge on the West Side Pacific Highway, and in anticipation of the necessity in the near future for renewing the trestle over Onion Flat, a short distance south of the Tualatin river, for both of which improvements a large amount of fill material was required, which could most advantageously be secured from line changes at other points on the highway where coincident improvements in line or grade could be achieved; and also because line changes to eliminate dangerous curves were needed at several other points, particularly at Middleton and at the Multnomah County line, it was decided to connect up those various sections and make a continuous widening project from the Multnomah County line to Middleton.

The present project does not contemplate anything in the way of widening or changing the existing pavement, except at the Tualatin River bridge and at the Middleton line change, where the old road is to be abandoned so far as state highway traffic is concerned, and the new grade is to be rock-surfaced. Throughout the remainder of the section, the roadbed is being widened and rock shoulders are being constructed along the present pavement. The rock shoulders are constructed of broken stone secured from a quarry about 1¼ miles east of the town of Tualatin; 6 inches in compacted thickness and of varying widths; 6 feet on sections where the revised center line follows the present pavement; 4 feet where there are line changes which are not expected to be paved and put in use in the near future, and where the present road will continue to be used for local traffic after the new grade is paved; and 18 inches on the section north of Onion Flat opposite the line change, from which material for the Onion Flat fill was secured and which it is expected will be paved when the Onion Flat bridge is built.

On all the line changes right-of-way has been acquired to a width of 80 feet, and through the settlement at Tigard and Tigardville the roadbed is to be graded to a street section, allowing for future construction by the property owners of curbs and sidewalks on proper grade and line.

[WASHINGTON]

Forest Grove-Yamhill County Line Non-skid Surfacing

On the Tualatin Highway, from the railroad crossing south of Forest Grove at Mile Point 24.34 to the Yamhill County line at Mile Point 31.07; 6.73 miles of non-skid surface treatment of the asphaltic concrete pavement. Work done by state oiling crew under Foreman O. C. Yocum during August, 1930. The rock used in the work was furnished under unit 1 of the Willamette Valley Rock Production contract.

The total expenditures to date have amounted to $8,121.21 from state funds. Resident Engineer, F. D. Eason.

Unit No. 1, Willamette Valley Rock Production Project

On the Tualatin Valley Highway from Hillsboro to Gaston; furnishing crushed gravel in stockpiles for later use by the state in connection with maintenance and betterment purposes.

Contract No. 1161 was awarded March 12, 1930, to the Ross Island Sand and Gravel Company, of Portland, Oregon. Work commenced April 21, 1930, and was completed August 1, 1930. Final cost was $14,428.28. Resident Engineer, F. D. Eason.

This contract covers the furnishing of crushed gravel material for non-skid treatment of the Tualatin Valley Highway done in 1930 on the bituminous pavement sections between Hillsboro and Gaston, and also for a short experimental redress section on the concrete pavement at the east city limit of Hillsboro.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 262.47
Labor and materials furnished by state:		
Freight on rock shipped by state		599.80
Freight on rock shipped by contractor and deducted from final estimate		2,391.55
Lease and preparation of stock pile sites		36.83
Hauling maintenance materials		35.32
Contract items as follows:		
¾-inch to 1½-inch materials in stock pile, 3,506 cu. yds. at $2.70	$ 9,466.20	
¼-inch to ¾-inch materials in stock pile, 1,353 cu. yds. at $2.70	3,653.10	
Truck haul, 2,429 yd. mi. at 17c	412.93	
Crushed rock and sand, 644 cu. yds. at $1.25	805.00	
Total amount earned by contractor	$ 14,337.23	
Deductions:		
Freight on rock paid by state	2,891.55	
Retained percentage	343.37	
Total amount paid to contractor		11,102.31
Total amount expended on project, all state funds, 1929-30		$ 14,428.28

Fanno Creek Bridge

On the West Side Pacific Highway at Tigard; three 20-foot and one 10-foot frame trestle bents with 24-foot clear roadway.

This timber structure replaces a narrow timber trestle at the same location. The work was done by state forces during February and March, 1929, under the direction of E. G. Ricketts. The total cost of the structure amounted to $3,002.41, all from state funds.

Multnomah County Line-Beaverton Grading

On the Tualatin Valley Highway, from Mile Point 4.20 at Sta. minus 1+90.6, at the Multnomah-Washington County line, southwest to Mile Point 7.97 at Sta. 197+00, at the intersection with Cedar street in the town of Beaverton; 3.77 miles of grading.

Contract No. 1030, awarded January 26, 1928, to Edlefson-Weygandt Co., of Portland, Oregon. Work commenced March 1, 1928, completed October 1, 1928.

Final cost, $78,575.59. Resident Engineer, F. T. Young.

Further details will be found on page 453 of the 1927-1928 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 5,473.22
Labor and materials furnished by state:		
Repairing broken tile drains		321.24
Constructing flumes for fill slope protection		455.99
Constructing connection between state highway and county road		16,138.58
Signs for traffic control		58.83
Sprinkling surfacing		39.18
Repairing pavement in Beaverton at new highway crossing		104.30
Credit by sale of old lumber Cr.		39.00
Contract items as follows:		
Clearing and grubbing, all	$ 350.00	
Common excavation, 67,585 cu. yds. at 33c	22,303.05	
Solid rock excavation, 9,106 cu. yds. at $1.00	9,106.00	
Overhaul, 66,307 yd. sta. at 3c	1,989.21	
Truck haul, 27,855 yd. mi. at 18c	5,013.90	
Lumber and timber, 19.884 M-FBM at $60.00	1,193.04	
6-inch drain tile, 1,076 lin. ft. at 26c	279.76	
8-inch concrete sewer pipe, 660 lin. ft. at 45c	297.00	
8-inch by 4 foot concrete wyes, 13 each at $1.80	23.40	
12-inch concrete pipe, 933 lin. ft. at $1.00	933.00	
18-inch concrete pipe, 453 lin. ft. at $2.50	1,132.50	
48-inch concrete pipe, 38 lin. ft. at $8.50	323.00	
Class "A" concrete, 200.85 cu. yds. at $20,00	4,017.00	
Class "C" concrete, 13.81 cu. yds. at $19.00	262.39	
Base course surfacing, 1,291 cu. yds. at $2.50	3,227.50	
Top course surfacing, 812 cu. yds. at $2.50	2,030.00	
Removal of old pavement, 899.7 sq. yds. at 80c	719.76	
Structural excavation, 538 cu. yds. at $1.50	807.00	
Rubble masonry, 61.16 cu. yds. at $9.00	550.44	
Reinforcing steel, 12,865 lbs. at 6c	771.90	
Galvanized water stop, 468 lin. ft. at 8½c	39.78	
Rock backfill, 28.5 cu. yds. at $2.50	71.25	
Extra clearing, .138 acres at $150.00	20.70	
Force account items:		
Salvaging culvert pipe from old road and replacing it on new work	66.48	
Moving right-of-way fence	32.83	
Furnishing, hauling, and spreading clay filler	78.19	
Restoring water supply to private property	140.99	
Removing logs from right-of-way	91.43	
Removing pump house from right-of-way	68.52	
Removing concrete headwalls before extending culvert	83.23	
Total amount paid to contractor		56,023.25
Grand total cost of project		$ 78,575.59

PARTICIPATION IN COST

	State	*County*	*Total*
Expended 1927-28 biennium	$ 68,487.01	$ 5,000.00	$ 73,487.01
Expended 1929-30 biennium	5,088.58		5,088.58
Total of expenditures	$ 73,575.59	$ 5,000.00	$ 78,575.59

[WASHINGTON]

Tualatin River Bridge and Cedar Creek Culvert

Federal Aid Project No. 73

On the West Side Pacific Highway 3 miles south of Tigard; one 150-foot steel deck truss span and 360 lineal feet of concrete approach, with 27-foot roadway and two 5-foot sidewalks; and one 8x8-foot reinforced concrete box culvert.

Contract No. 1110, awarded August 6, 1929, to Northwest Contract Company, of Portland, Oregon. Work commenced August 6, 1929; completed May 31, 1930. Final cost, $74,578.48. Resident Engineer, R. G. Barnes.

The new bridge is part of a realignment and widening project and eliminates an old covered wood truss bridge. The old structure was located at the end of a sharp curve at which several serious accidents have occurred.

Included in this project there is also a concrete culvert on Cedar Creek which replaces an old wood trestle.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 3,459.42
Improvement of stream channel		286.52
Contract items as follows:		
Tualatin River Bridge—		
Excavation, 1,218.9 cu. yds. at $2.50	$ 3,047.25	
Excavation below elevation, 10.0 cu. yds. at $2.00	20.00	
Piling, 3,337 lin. ft. at 34c	1,134.58	
Seal concrete, 61.75 cu. yds. at $10.00	617.50	
Class "A" concrete, 783.22 cu. yds. at $22.00	17,230.84	
Class "B" concrete, 196.52 cu. yds. at $16.00	3,144.32	
Class "D" concrete, 501.16 cu. yds. at $20.00	10,023.60	
Metal reinforcement, 267,895 lbs. at 4½c	12,055.28	
Structural steel, 218,580 lbs. at 6.1c	13,333,38	
Concrete handrail, 1,040 lin. ft. at $4.50	4,680.00	
Excess pile cut-off, 1,082.50 lin. ft. at 10½c	113.66	
Force account items:		
Furnishing materials and erecting engineer's office	75.95	
Furnishing and placing water stops and expansion joint filler	311.13	
Cement adjustment, 140 sacks at 76¼c ......Cr.	106.75	
Total amount paid to contractor on Tualatin River bridge		65,680.74
Cedar Creek Bridge—		
Excavation, 305 cu. yds. at $3.00	$ 915.00	
Class "B" concrete, 138.4 cu. yds. at $25.00	3,460.00	
Metal reinforcement, 12,358 lbs. at 5c	617.80	
Removal of old bridge and maintenance of traffic, lump sum	219.00	
Total earned by contractor	$ 5,211.80	
Deduction for removal of old bridge by state forces	60.00	
Total amount paid to contractor, Cedar Creek Bridge		5,151.80
Grand total cost of entire project, all state funds, 1929-30		$ 74,578.48

PARTICIPATION IN COST

	State	*Government*	*Total*
Expended to date	$ 74,578.48	$..........	$ 74,578.48
Estimated cost to complete	Cr. 46,463.15	46,463.15	....
Estimated total cost	$ 28,115.33	$ 46,463.15	$ 74,578.48

Aloha Grade Widening

On the Tualatin Valley Highway through the town of Aloha; 0.40 mile of grade widening by state forces. Buildings in the way of this improvement were moved by contract noted below. State forces began work June 12, 1929, and completed it in October, 1930.

Contract No. 1097 was awarded June 5, 1929, to F. L. Hewitt of Hillsboro, Oregon. Work commenced June 12, 1929, and was completed September 20, 1929. Final cost was $11,616.61 from state funds. Resident Engineer, F. D. Eason.

This is a project for widening the right-of-way and roadbed of the Tualatin Valley Highway through the town of Aloha where traffic congestion at busy hours had brought about a hazardous condition. The project provided for widening the right-of-way from 50 feet to 80 feet upon improved alignment and grading the roadbed to a street section. The right-of-way widening required the moving of a number of houses and business buildings, which work was contracted to F. L. Hewitt. The grading and construction of rock shoulders was done by state forces. No widening of the pavement was undertaken.

Maintenance

The State Highway System in Washington County comprises a total of 39.13 miles, of which there are 24.88 miles of bitumiuons pavement and 14.25 miles of concrete pavement.

The more important items of maintenance and betterment work performed in Washington County during the past two years have been the non-skid treatment of the Multnomah County line-Rex section of the West Side Pacific Highway in 1929, and the similar work on the Hillsboro-Gaston section of the Tualatin Valley Highway in 1930.

In connection with the latter work a short experimental section of bituminous redress on concrete pavement was constructed at the east city limits of Hillsboro, this redress being of the same general specification as the non-skid application placed on bituminous pavement. The pavement redressed is approximately a half mile in length and includes a section where not only the concrete pavement was badly cracked, no single panel being without at least one crack and generally with several, but also where the surface had spalled off in considerable areas to a depth varying from perhaps a sixteenth to half an inch and at the cracks to even greater depth.

This treatment, so far as time has given opportunity to judge, is entirely satisfactory and indicates that it is both an economical and efficient method of restoring to satisfactory condition the surface of concrete pavements, which have become rough and unsightly from cracking and spalling. The completed redress gives a surface fully as non-skid as the original concrete.

Ordinary routine maintenance of roadbed, shoulders and drainage with a limited amount of pavement repair work have comprised the other maintenance operations in Washington County during the two years except for the abnormal amount of snow removal work required during the storm of January, 1930.

State highway maintenance and betterment work in Washington County has been under the field direction of F. D. Eason, Resident Engineer, with headquarters at McMinnville.

Total expenditures for general maintenance in the county during the biennium have amounted to $20,161.81, and for minor betterments $14,325.50.

Multnomah County Line-Middleton Survey

In preparatiion for a betterment project consisting of roadbed widening and rock shoulder construction on the Multnomah County line-Middleton section of the West Side Pacific Highway in Washington County, a survey was made in 1929-30, under the supervision of F. T. Young, Resident Engineer.

Included in the proposed regrading project were the construction of approach fills of the new Tualatin River bridge and the replacement of a major part of the Onion Flat trestle with a fill, which together required a much larger quantity of filling material than could be secured by widening the highway on its existing line and grade.

Rather than simply borrow the required material from land that would have had to be purchased for the purpose, advantage of the situation was taken to make two major line changes which would improve the alignment and grade of the highway, while supplying the needed material. The revision is immediately north of Onion Flat and one about a mile north of Tualatin River and just south of Tigardville. Major changes were also made at Middleton and at the Multnomah County line where a number of bad curves were eliminated. By these major changes and a number of minor revisions at other points, it has been possible to reduce the maximum degree of curve on the entire section to 4 degrees, the number of curves from 46 to 21, and the total curvature from 753 degrees to 440 degrees.

Hillsboro-Beaverton Survey

Early in 1929 a survey for widening and line revision of the Tualatin Valley Highway through the settlement of Aloha was made. At the same time residents along the highway between Beaverton and Hillsboro interested in securing a general widening of the highway were securing options on the additional right-of-way necessary for such widening, and to facilitate their task a similar survey was made through the settlement at Reedville.

These surveys aggregated only about 0.80 mile in length but included also property ties necessary for acquiring right-of-way through Aloha where the improvement has actually been completed. The survey work was under the direction of F. T. Young, Resident Engineer.

Portland-Coast Short Route Reconnaissance

Realizing the desirability and economic importance of a shorter, faster highway from Portland to the coast, and anticipating the need for more definite information as to the relative practicability of the various routes which have been proposed, the Highway Commission ordered a reconnaissance survey of all such proposed routes and any others that might be developed. Such reconnaissance was begun in August, 1930, by H. N. Hackett, Locating Engineer.

The principal routes being investigated are the so-called Trask River, Salmonberry, Cook Creek, Vernonia-Hamlet, and Saddle Mountain routes, and there is also available for comparison the actual instrumental survey of the Wilson River route made by this department in 1925.

The work being done includes a compilation of a considerable amount of contour information secured from a number of timber individuals and corporations owning timber areas in the territory traversed, and acknowledgment is due for the very courteous cooperation received from such owners in making their maps and information available to the Commission's engineer. In addition to the usual field reconnaissance of the various routes, arrangements have been made for taking aerial protographic strips of each of the routes which will provide a continuous aerial picture of each and will also furnish views with stereoscopic overlap from which much valuable information can be obtained as to the topographic character of the terrain traversed by the routes that could not otherwise be secured without a great deal of arduous field work requiring considerable time.

From this reconnaissance combining map, field and aerial study, it is only expected to secure a rough relative idea of the physical practicability of the various routes with approximate data as to length of routes, elevations of summits to be crossed and, as in the case of the Cook Creek route, to be maintained and even more roughly approximate comparative construction costs. In the final determination of the route which might be adopted and built, there will necessarily be taken into consideration a number of phases of the situation which may perhaps be combined and expressed as the question of "the greatest benefit to the greatest number."

It is expected that these present reconnaissance investigations will be completed about the first of the coming year.

WHEELER COUNTY

Construction work in this county, during the biennium, while confined to that section of the Ochoco Highway between Mitchell and Dayville, has been of considerable volume. All of the grading between these two points is now complete, most of this work having been done during the past two-year period. An 18-mile surfacing project extending from Mitchell to Willow Creek has been placed under contract and about seven miles of this work have been finished. Surfacing of the balance of this highway, extending from Willow Creek to the connection with the John Day Highway near Dayville, has been authorized by the State Highway Commission, and it is planned to call for bids on this work in the near future.

Several minor betterment jobs have been completed, which consisted of roadbed widening, erection of additional guard fence, erection of snow fence and the cutting of dangerous overhanging trees.

All work in this county has been done under the supervision of C. W. Wanzer, Division Engineer, whose headquarters are at Bend.

Mitchell-Willow Creek Surfacing

Federal Aid Project Nos. 134-A, 134-B, 134-C

On the Ochoco Highway, from Sta. 1+00, which station is at the west end of the bridge over Bridge Creek in the town of Mitchell, to Sta. 957+00, which station is about 18 miles east of Mitchell; 18.0 miles of surfacing and the furnishing of approximately 19,000 cubic yards of broken stone for use in connection with maintenance and betterment operations.

Contract No. 1205 was awarded June 26, 1930, to Milne and Dussault of Portland, Oregon. Work was commenced July 10, 1930. Estimated cost, $144,000, consisting of $74,114.63 from state funds and $69,885.37 from government funds. Expenditures to date have amounted to $12,590.51 from state funds. Resident Engineer, J. E. Peck.

Work on this project consists of the construction of a water-bound macadam surface 20 feet in width and the stockpiling of broken stone for later use in constructing a bituminous macadam wearing surface and, likewise, for general maintenance requirements. The three quarries used for this work were purchased by the state.

Rock Creek Bridge

Federal Aid Project No. 134-D

On the Ochoco Highway 28 miles east of Mitchell one 45-foot, one 60-foot and one 45-foot continuous concrete spans, with 24-foot clear roadway.

Contract No. 1216, awarded July 24, 1930, to Kuckenberg-Wittman Company, of Portland, Oregon. Work commenced August 15, 1930. Estimated cost, $17,000, consisting of $6,567.77 from state funds and $10,432.23 from government funds. A total of $3,673.11 has been expended to date from state funds. Resident Engineer, Chas. K. Hubbard.

This bridge is part of the new highway construction under way between Mitchell and the John Day Highway.

Mitchell-Keyes Creek Summit Grading

Federal Aid Project No. 134-A

On the Ochoco Highway, from Sta. 1+00, which station is at the west end of the bridge over Bridge Creek in the town of Mitchell, to Sta. 396+50, which station is just east of the summit of the long grade east of Mitchell; 7.48 miles of grading standard 24-foot roadbed.

Contract No. 1002, awarded September 27, 1927, to F. L. Brown of Portland, Oregon. Work commenced November 1, 1927; completed March 9, 1929. Final cost, $88,525.50. Resident Engineer, J. E. Peck.

The grading of this project was finished on December 29, 1928, but prior to that time a special agreement with the contractor was executed whereby he was to cover the soft muddy spots in the road with talus secured from a slide located at Sta. 228. Approximately 4,900 cubic yards of rock were placed on the road, this additional work delaying the final completion of the job until March 9, 1929.

Further details will be found on page 457 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 9,314.76
Reconstruction of pipe line		50.25
Removing slides		24.00
Prospecting for surfacing materials		48.00
Construction signs for traffic control		28.18
Engineering expense charged to contractor		1,225.68
Contract items as follows:		
Clearing and grubbing, all	$ 50.00	
Common excavation, 29,078.2 cu. yds. at 27c	7,851.11	
Intermediate excavation, 23,507.5 cu. yds. at 40c	9,403.00	
Solid rock excavation, 46,859.8 cu. yds. at 90c	42,173.82	
Overhaul, 43,978 yd. sta. at 2c	879.56	
12-inch corrugated galvanized iron pipe, 142 lin. ft. at $1.25	177.50	
18-inch corrugated galvanized iron pipe, 1,578 lin. ft. at $1.75	2,761.50	
24-inch corrugated galvanized iron pipe, 196 lin. ft. at $3.27½	641.90	
36-inch corrugated galvanized iron pipe, 156 lin. ft. at $5.00	780.00	
Lumber and timber, 154.833 M-FBM at $60.00	9,289.98	
Timber piling, 2,958 lin. ft. at 60c	1,774.80	
Loading talus, 3,021 cu. yds. at 45c	1,359.45	
Spreading talus, 3,021 cu. yds. at 10c	302.10	
Hauling talus, 6,471 yd. mi. at 20c	1,294.20	
Force account items as follows:		
Rebuild flume destroyed in construction of highway	102.21	
Replace ditch with flume	24.42	
Raise north end of bridge, on approach road, to new grade	60.97	
Build catch basin at sta. 12+00	74.82	
Anchoring deck to piling to insure against flood damage (Br. No. 1)	58.97	
Total amount earned by contractor	$ 79,060.31	
Deduction of engineering cost for overrun of time limit	1,225.68	
Total amount paid to contractor		77,834.63
Grand total cost of project		$ 88,525.50

PARTICIPATION IN COST

	State	*County*	*Government*	*Total*
Expended 1927-28 biennium	$ 26,890.41	$ 5,000.00	$ 36,765.84	$ 68,656.25
Expended 1929-30 biennium	11,668.04	....	8,201.21	19,869.25
Expended to date	$ 38,558.45	$ 5,000.00	$ 44,967.05	$ 88,525.50
Estimated cost to complete	Cr. 14,312.02	10,000.00	4,312.02	....
Estimated total cost	$ 24,246.43	$ 15,000.00	$ 49,279.07	$ 88,525.50

[WHEELER]

Keyes Creek Summit-Fort Creek Grading

Federal Aid Project No. 134-B

On the Ochoco Highway, from Sta. 392+70, which station is about 1,000 feet east of the Keyes Creek grade and about 75 miles east of the town of Mitchell, to Sta. 817+80, which station is about 0.2 mile west of the junction of Fort Creek with Mountain Creek; 8.02 miles of grading standard 24-foot roadbed.

Contract No. 1059 was awarded December 19, 1928, to Earl L. McNutt of Eugene, Oregon. Work commenced February 11, 1929; completed August 8, 1929. Final cost, $62,930.29. Resident Engineer, J. E. Peck.

Work on this section was begun in the early spring of 1929. Good progress was made by the contractor and the project was completed within the specified time. Several miles of the section traversed wet meadow land which caused the contractor considerable trouble. A drag line outfit proved the solution of this problem, good progress being made after its installation.

Temporary gravel surfacing amounting to approximately 5,000 cubic yards was placed, the work being done by the contractor, under a supplemental price agreement. This temporary surfacing was constructed to permit the use of the road during wet seasons prior to the time that actual surfacing of the section could be completed.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 4,913.63
Digging drainage ditches		38.00
Constructing temporary surfacing		54.50
Contract items as follows:		
Clearing and grubbing, all	$ 500.00	
Common excavation, 50,991.7 cu. yds. at 24c	12,238.01	
Intermediate excavation, 23,521.9 cu. yds. at 70c	16,465.33	
Solid rock excavation, 13,409.9 cu. yds. at $1.00	13,409.90	
Overhaul, 12,370 yd. sta. at 4c	494.80	
12-inch corrugated iron pipe, 306 lin. ft. at $1.30	397.80	
18-inch corrugated iron pipe, 1,144 lin. ft. at $2.50	2,860.00	
24-inch corrugated iron pipe, 304 lin. ft. at $3.00	912.00	
36-inch corrugated iron pipe, 176 lin. ft. at $6.00	1,056.00	
Class "A" concrete 75.48 cu. yds. at $30.00	2,264.40	
Metal reinforcement, 6,446.1 lbs. at 6c	386.77	
Timber piling, 260.4 lin. ft. at $1.50	390.60	
Lumber and timber, 20.821 M-FBM at $60.00	1,249.26	
Riprap, 101.3 cu. yds. at $2.00	202.60	
Loading temporary surfacing materials, 4,352 cu. yds. at 50c	2,176.00	
Spreading temporary surfacing materials, 4,352 cu. yds. at 10c	435.20	
Hauling temporary surfacing materials, 12,145.5 yd. mi. at 20c	2,429.10	
Force account item:		
Replacing irrigation dam destroyed in construction	56.39	
Total amount paid contractor		57,924.16
Grand total cost of project, 1929-30		$ 62,930.29

PARTICIPATION IN COST

	State	*Government*	*Total*
Expended to date	$ 41,103.65	$ 21,826.64	$ 62,930.29
Estimated cost to complete	Cr. 8,033.24	8,033.24	
Estimated total cost	$ 33,070.41	$ 29,859.88	$ 62,930.29

Fort Creek-Barnhouse Ranch Grading

On the Ochoco Highway, from Sta. 817+80, which station is about 15 miles east of the town of Mitchell, to Sta. 1185+19.3, which station is located in the Barnhouse Basin; 6.95 miles of grading 24-foot roadbed.

Contract No. 1108 was awarded July 25, 1929, to H. E. Cornell of Boise, Idaho. Work commenced August 9, 1929. Estimated cost, $135,000, consisting of $54,468.47 from state funds and $80,531.53 from government funds. Expenditures to date are $40,079.50 from state funds and $39,233.32 from government funds. Resident Engineer, J. E. Peck.

This section of the Ochoco Highway is located in the narrow Mountain Creek canyon. The hills bordering the canyon are steep, and as a consequence the grading work encountered on the project was of a somewhat heavy nature. Work begun in August, 1929, but was suspended during December and January due to adverse weather conditions. It is estimated that the project will be completed by November, 1930.

The right of way, 80 feet in width, was secured by Wheeler County.

Barnhouse Ranch-Picture Gorge Grading

Federal Aid Project No. 134-D

On the Ochoco Highway, from Sta. 1185+19.3=Sta. 1181+02.9 (about 22 miles east of Mitchell) to Sta. 1705+82.8, which station is at the point of junction of the Ochoco Highway with the John Day Highway, about 7 miles north of Dayville; 10.0 miles of grading, standard roadway 24 feet in width.

Contract No. 1146, awarded January 16, 1930, to the J. W. Feak Construction Company, of Tacoma, Washington. Work commenced February 11, 1930. Estimated cost, $215,000, consisting of $69,406.60 from state funds and $127,915.72 from government funds. Expenditures to date have been $69,406.60 from state funds and $58,167.80 from government funds. Resident Engineer, J. E. Peck.

The awarding of a contract for the grading of this section was made in February, 1930, to the J. W. Feak Construction Company and its completion will mark the finishing of the grading of the Ochoco Highway. It is anticipated the project will be completed by the middle of December of 1930. The grading work on the project was the heaviest encountered on the Ochoco Highway, that on the east one and one-half-mile portion being especially heavy.

The right of way is 80 feet in width and was secured by Grant and Wheeler Counties.

Bridge Creek Bridge

Federal Aid Project No. 134-A

On the Ochoco Highway at Mitchell; one 36-foot and two 26-foot concrete spans, with 24-foot clear roadway.

Contract No. 1111, awarded August 5, 1929, to Edward Krieg, of Hood River, Oregon. Work commenced August 15, 1929; completed December 15, 1929. Final cost, $9,608.05. Resident Engineer, C. K. Hubbard.

[WHEELER]

This bridge is part of the new highway being built east from Mitchell to a connection with the John Day Highway. It takes the place of a log span at the same site.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 873.50
Bronze name plates		20.81
Contract items as follows:		
Excavation, 247.36 cu. yds. at $2.00	$ 494.72	
Class "A" concrete, 97.31 cu. yds. at $30.00	2,919.30	
Class "D" concrete, 59.76 cu. yds. at $30.00	1,791.90	
Metal reinforcement, 31,266 lbs. at 5.5c	1,719.63	
Concrete handrail, 193 lin. ft. at $5.50	1,061.50	
Removal of old embankment, 251.57 cu. yds. at 50c	125.79	
Removal of old structure and maintenance of traffic, lump sum	250.00	
Cement adjustment	115.89	
Force account item:		
Grading approaches	235.01	
Total amount paid to contractor		8,713.74
Grand total cost of project, 1929-30		$ 9,608.05

PARTICIPATION IN COST

	State	*Government*	*Total*
Total of expenditures	$ 5,562.55	$ 4,045.50	$ 9,608.05
Estimated cost to complete	Cr. 1,684.01	1,684.01	
Estimated total cost	$ 3,878.54	$ 5,729.51	$ 9,608.05

Maintenance

There are two state highways under maintenance in this county with a total of 91.80 miles, which is classified as follows: 6.58 miles of oiled macadam, 58.58 miles of untreated macadam and 26.64 miles of road with a temporary surfacing.

Maintenance operations have not been so extensive in this county, as in some of the others, due to the excellent surfacing, good drainage conditions and the small volume of traffic, and although the usual activities of the maintenance crews have been carried on continually, the crews required have been comparatively small.

The maintenance work on the John Day Highway has been under the supervision of J. R. Mitchell, Resident Maintenance Engineer, who is located at Condon. W. S. Hodge, Resident Maintenance Engineer, with headquarters at Redmond, has been in charge of all maintenance work done on the Ochoco Highway.

During the biennium the expenditures in the county for general maintenance and minor betterments have been $67,812.11 and $12,091.72 respectively.

YAMHILL COUNTY

The State Highway System in Yamhill County was recorded as complete at the close of 1926, since which time no work in the way of major betterment has been necessary.

Routine maintenance and minor betterments principally in the way of non-skid treatment of bituminous pavement has constituted the state highway work in the county.

All matters relating to state highways in Yamhill County have been handled under the supervision of W. D. Clarke, Division Engineer, with headquarters at Salem.

Unit No. 2, Willamette Valley Rock Production Project

On the West Side Pacific Highway, from McMinnville to Holmes Gap, and on the McMinnville-Tillamook Highway from McMinnville to a point four miles east of Sheridan; furnishing crushed gravel in stockpiles for later use by the state in connection with maintenance and betterment purposes.

Contract No. 1162 was awarded March 12, 1930, to the Dayton Sand and Gravel Company of Dayton, Oregon. Work was commenced April 15, 1930, and completed October 1, 1930. Estimated cost, $21,000 from state funds. Expenditures to date, $16,144.37. Resident Engineer, F. D. Eason.

This contract covers the furnishing of crushed gravel material for non-skid treatment of the bituminous paved sections of the West Side Pacific Highway from McMinnville to Holmes Gap and the McMinnville-Tillamook Highway from its junction with the West Side Pacific Highway south of McMinnville to Bellevue.

It was expected all the material would be available in time to complete the non-skid work in 1930, but delays occurred in the production, due to the contractor not having a proper permit from the War Department for removal of the material from the Willamette River from which it was secured, and to his later being unable to obtain the material on account of an unfavorable stage of the river, so that completion of the contract has been postponed until the spring of 1931, and the non-skid treatment of the Bellevue section is thus necessarily deferred until next season.

Agency Creek Bridge Approaches Grading

On the McMinnville-Tillamook Highway, at the Agency Creek bridge, which bridge is approximately 800 feet west of Grand Ronde Agency.

Work commenced January 20, 1929; completed February 6, 1929. Final cost, $611.26 from state funds. Resident Engineer, G. S. Gray.

This project covers the construction of approaches in the slightly revised alignment to the new Agency Creek bridge near Grand Ronde. The work was performed by state forces because of its small amount.

McMinnville-Polk County Line Non-Skid Surfacing

On the West Side Pacific Highway, from the south limits of McMinnville to the junction with the McMinnville-Tillamook Highway and from the north limits of Amity at Mile Point 45.25 to the beginning of the wide pavement at Mile Point 45.68, and from the north end of the 16-foot pavement at Mile Point 45.82 to the Polk County line at Mile Point 48.62; 4.25 miles of non-skid surface treatment of asphaltic concrete pavement.

This work was performed by state oiling crew under Foreman O. C. Yocum during August, 1930. Rock was furnished under Unit 2 of the Willamette Valley Rock Production contract.

Expenditures to date have amounted to $4,748.29 from state funds. Resident Engineer, F. D. Eason.

Mercier Bridge Over Yamhill River

Federal Aid Project No. 146-A

On the McMinnville-Tillamook Highway approximately 3 miles west of Grand Ronde Agency; 100-foot concrete viaduct on old piers, 24-foot roadway.

Contract No. 1061, awarded December 19, 1928, to J. F. Johnston, of Newberg, Oregon. Work commenced January 8, 1929; completed May 18, 1929. Final cost, $12,732.31. Resident Engineer, J. T. Skelton.

This bridge replaces a light timber structure at the same site. The new bridge is on a slightly revised alignment.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 1,240.14
Extra steel shipped to job but not used		45.54
Grading approaches		2,188.36
Bronze name plates		26.30
Red reflectors and signs for traffic control		8.74
Contract items as follows:		
Excavation, 67 cu. yds. at $2.50	$ 167.50	
Excavation below elevation, 14.8 cu. yds. at $3.00	44.40	
Class "A" concrete, 155.67 cu. yds. at $22.50	3,502.58	
Class "D" concrete, 58.73 cu. yds. at $22.50	1,321.42	
Reinforcing steel, 40,203 lbs. at $4.75	1,909.64	
Removal of old bridge and maintenance of traffic, lump sum	1,250.00	
Concrete handrail, 215.25 lin. ft. at $4.75	1,022.44	
Cement adjustment, 1.75 bbls. at $3.00	5.25	
Total amount paid to contractor		9,223.23
Grand total cost of project, 1929-30		$ 12,732.31

PARTICIPATION IN COST

State	$ 6,484.61
Government	6,247.70
Total	$ 12,732.31

Grand Ronde-Sheridan Maintenance Materials

On the McMinnville-Tillamook Highway, from Mile Point 17.0, approximately one and two-tenths miles east of Bee Ranch, east to Mile Point 35.89 at the west city limits of Sheridan; the furnishing of 37,835 cubic yards of maintenance materials.

Contract No. 958, awarded March 4, 1927, to the Motor Investment Company, of Portland, Oregon. Work commenced July 1, 1927; completed September 15, 1928. Final cost, $97,937.96. Resident Engineer, G. S. Gray.

Further details will be found on page 461 of the 1927-28 report.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 3,126.69
Lease of quarry sites		1,260.00
Lease of stock pile sites		172.92
Preparation of stock pile sites		1,644.48
State-owned equipment furnished contractor by special agreement		870.00
Constructing surfacing		246.03
Hauling and stockpiling maintenance materials		693.23
Purchasing and placing crushed gravel on Sheridan-Willamina section		12,747.08
Labor and material deducted from contractor's estimate		476.74
Credit for materials stockpiled for betterment work Cr.		26,164.40
Contract items as follows:		
Gold Creek Quarry—		
Grade "E" materials in stock pile, 285.2 cu. yds. at $2.44	$ 695.89	
Grade "A" materials in trucks, 156 cu. yds. at $1.50	234.00	
Grade "B" materials in trucks, 97.5 cu. yds. at $1.40	136.50	
Grade "D" materials in trucks, 192 cu. yds. at $1.30	249.60	
Truck haul, 3,157 yd. mi. at 18c	568.26	
Werth Quarry—		
Grade "A" materials in stock pile, 3,497.1 cu. yds. at $3.41	11,925.11	
Grade "B" materials in stock pile, 2,512.8 cu. yds. at $3.31	8,317.37	
Grade "C" materials in stock pile, 2,561.8 cu. yds. at $3.59	9,196.86	
Grade "D" materials in stock pile, 8,522.6 cu. yds. at $3.09	26,334.83	
Grade "E" materials in stock pile, 576.9 cu. yds. at $3.09	1,782.62	
1½-inch to 3-inch materials in stock pile, 1,701.7 cu. yds. at $3.09	5,258.25	
Grade "A" materials in trucks, 68 cu. yds. at $2.15	146.20	
Grade "B" materials in trucks, 626.5 cu. yds. at $2.05	1,284.32	
Grade "C" materials in trucks, 336 cu. yds. at $2.05	688.80	
Grade "D" materials in trucks, 9,680.5 cu. yds. at $1.95	18,876.98	
Grade "E" materials in trucks, 5,549.5 cu. yds. at $1.95	10,821.53	
1½-inch to 3-inch materials in trucks, 24 cu. yds. at $1.95	46.80	
Truck haul, 62,127 yd. mi. at 18c	11,182.86	
Extra premium on bond (adjustment)	441.92	
Force account items:		
Prospecting for surfacing materials	269.35	
Driving and shooting Coyote Tunnel at Gold Creek quarry	2,986.72	
Transferring plant from Gold Creek to Werth quarry	3,297.43	
Total amount earned by contractor	$114,742.20	
Deductions:		
Haul adjustment	11,400.27	
Labor and material furnished by state	476.74	
Total amount paid contractor		102,865.19
Grand total cost of project, all state funds		$ 97,937.96

SEGREGATION OF FUNDS

Expended 1927-28 biennium	$ 92,791.70
Expended 1929-30 biennium	5,146.26
Total of expenditures	$ 97,937.96

DETAIL OF BETTERMENT ITEMS TRANSFERRED

1½-inch to ¾-inch maintenance materials, 5,230.0 cu. yds. at $3.09	$ 16,160.70
¾-inch to ½-inch maintenance materials, 940.0 cu. yds. at $3.31	3,111.40
½-inch to ⅛-inch maintenance materials, 1,030.0 cu. yds. at $3.41	3,512.30
Grade "A" maintenance materials, 250.0 cu. yds. at $2.60	650.00
Grade "B" maintenance materials, 200.0 cu. yds. at $2.60	520.00
Grade "C" maintenance materials, 350.0 cu. yds. at $2.60	910.00
Grade "E" maintenance materials, 500.0 cu. yds. at $2.60	1,300.00
Total	$ 26,164.40

[YAMHILL]

Agency Creek Bridge

Federal Aid Project No. 12-B

On the McMinnville-Tillamook Highway near Grand Ronde Agency; one 18-foot, one 45-foot and one 18-foot continuous concrete spans, with two 3½-foot sidewalks and 24-foot roadway.

Contract No. 1051, awarded October 30, 1928, to Rigdon Bros., of Woodburn, Oregon. Work commenced November 2, 1928; completed March 16, 1929. Final cost, $8,494.88. Resident Engineer, J. T. Skelton.

This bridge replaces a light timber truss which failed under the heavy traffic carried by this road. It was built during the winter season immediately after the failure of the old structure.

DETAILED STATEMENT OF EXPENDITURES

Engineering		$ 962.42
Labor and materials furnished by state:		
Bronze bench marks and name plates		18.65
Grading approaches		30.62
Rental and freight on jacks used in moving temporary bridge		34.23
Contract items as follows:		
Excavation, 183.4 cu. yds. at $2.50	$ 458.50	
Class "A" concrete, 127.9 cu. yds. at $21.50	2,749.85	
Class "D" concrete, 53.3 cu. yds. at $21.50	1,145.95	
Reinforcing steel, 34,059 lbs. at 4.5c	1,532.66	
Concrete handrail, 174.3 lin. ft. at $5.00	871.50	
Removal of old bridge and maintenance of traffic, lump sum	100.00	
Cement correction, 15.5 bbls. at $2.80	43.40	
Force account items:		
Moving temporary bridge	486.24	
Removing portion of temporary bridge	38.45	
Changing location of reinforcing bars	22.41	
Total amount earned by contractor		7,448.96
Grand total cost of bridge, all state funds, 1929-30		$ 8,494.88

PARTICIPATION IN COST

State	$ 3,869.17
Government	4,625.71
Total	$ 8,494.88

Maintenance

The State Highway System in Yamhill County comprises a total of 71.54 miles, of which there are 16.54 miles of bituminous pavement, 37.81 miles of concrete pavement, 4.55 miles of bituminous macadam and 12.69 miles of oiled macadam.

Non-skid application to the bituminous paved portion of the sections of the West Side Pacific Highway has been accomplished in 1929 from the Washington County line at Rex to Newberg, and in 1930 from Amity to the Polk County line. Between Dolph and the Polk County line on the McMinnville-Tillamook Highway complete reoiling with heavy oil surface treatment has been done, together with a limited amount of plant mix patching in 1929. In 1930 a partial reoiling was given the section at places where the severe frost of the previous winter had broken the surface. Snow removal during the winter of 1929-30 assumed unusual proportions. For several days during the storm of January, 1930, considerable difficulty was experienced in keeping the

McMinnville-Tillamook Highway between McMinnville and Sheridan open to traffic on account on serious drifting. It was necessary to send a rotary snow plow to clear that section and also on to Tillamook County.

Maintenance work in Yamhill County has been under the field direction of F. D. Eason, Resident Maintenance Engineer, with headquarters at McMinnville.

During the biennium, the expenditures for general maintenance in the county have amounted to $68,859.52, and for minor betterment work $13,221.69.

Dolph-Valley Junction Maintenance Materials

On the McMinnville-Tillamook Highway, from Dolph to a point one mile east of Valley Junction; furnishing crushed gravel in stockpiles.

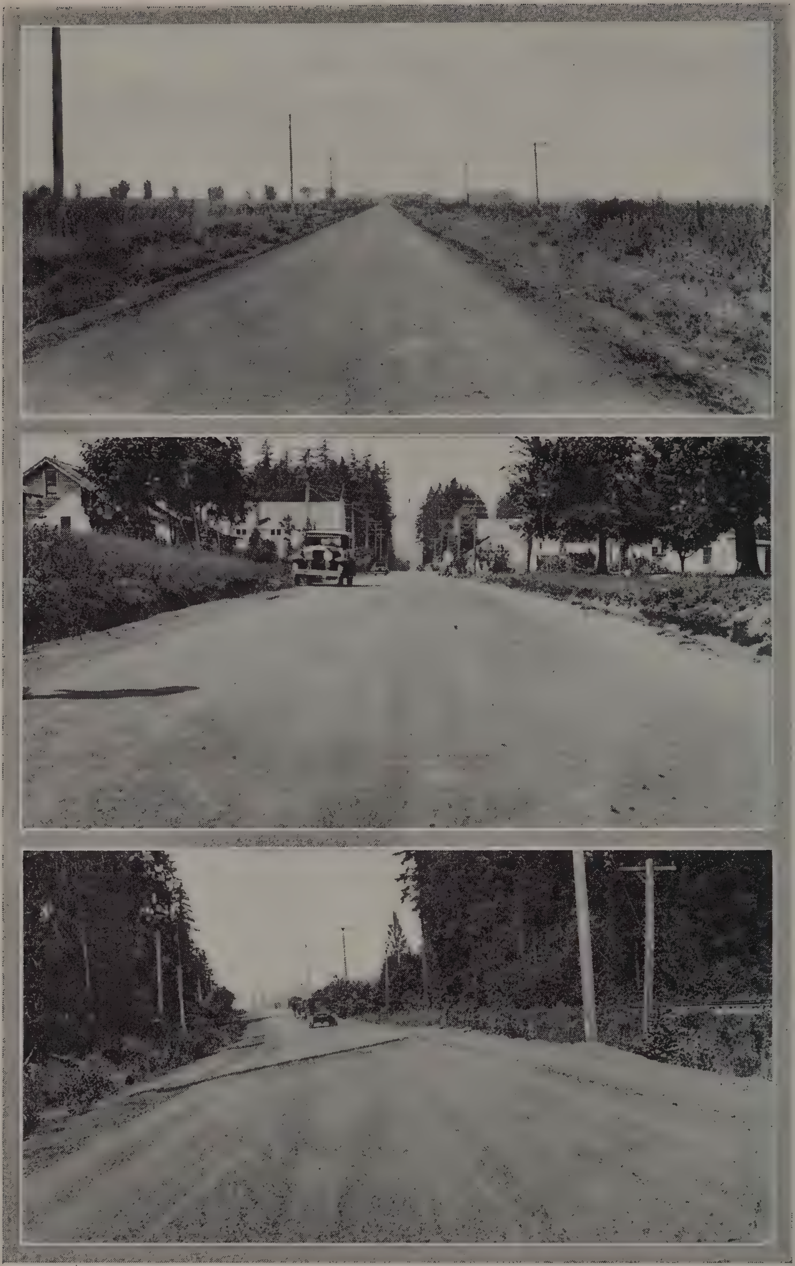
Contract No. 1210, awarded June 26, 1930, to J. H. Gallagher, of Portland, Oregon. Work commenced July 7, 1930; completed September 13, 1930. Estimated cost, $19,000 from state funds. Expenditures to date, $6,679.31. Resident Engineer, B. O. Johnson.

This contract covers the furnishing of crushed gravel material for bituminous macadam construction on a short section of the McMinnville-Tillamook Highway at Valley Junction, and for oil surface treatment of the section from Valley Junction to Dolph.

The material was produced by the contractor in connection with his contract for surfacing of the Grand Ronde-Tillamook County line section of the Salmon River Highway and simultaneously with the surfacing material. It was originally planned to secure sufficient material not only for the 1930 oiling and bituminous macadam work but also for future reoiling of the Valley Junction-Dolph section estimated to require two 50 per cent reoilings. The full contemplated amount was not furnished, however, owing to the fact that the supply of gravel in the bar from which the surfacing material was being secured and which produced satisfactory oiling rock played out and this contract was, therefore, curtailed by mutual consent.

Mercier Bridge-Cedar Creek Survey

In connection with the replacement of a deteriorated wooden structure with a concrete bridge over the Upper Yamhill River west of Grand Ronde on the McMinnville-Tillamook Highway, a line revision was made to afford better alignment at the bridge approaches. This survey covered approximately a mile of line and was made by B. O. Johnson, Resident Engineer.



IMPROVEMENTS ON COUNTY MARKET ROADS: UPPER—OIL ROAD MIX SURFACING ON NYSSA-ADRIAN ROAD IN MALHEUR COUNTY; CENTER—EMULSIFIED ASPHALT PENETRATION MACADAM AT PARKDALE IN HOOD RIVER COUNTY; LOWER—ASPHALT PENETRATION MACADAM NEAR VERNONIA IN COLUMBIA COUNTY

PART SIX

Description of

Work Accomplished by Counties

under the

Market Road Act

1920-1930

BAKER COUNTY

Since the Market Road Act took effect in 1920, a total of $799,265.24 has been made available for market roads in Baker county, of which $350,099.15 was from the state market road appropriation, $336,545.58 from county market road levies, and approximately $112,620.51 from cooperative funds such as bonds, motor license, general road funds, etc. Of this total $789,832.72 has been expended and the following work accomplished: 74.12 miles graded; 67.33 miles surfaced; 4.32 miles resurfaced; cooperation to the extent of $13,500 on the interstate bridge at Homestead, cooperation on state highways to the extent of $141,094.63 and maintenance during the last six years cost $36,375.41.

During the last two years, $118,770.42 has been spent and the following accomplished: 22.75 miles graded; 15.95 miles surfaced; 4.32 miles resurfaced; maintenance cost $15,785.24; and cooperation on state highway construction to the extent of $29,575.63.

The two-year period just ending witnessed the completion of the Baker-Cornucopia Highway from Halfway to Carson, the grading and surfacing of a principal road from Halfway down Pine Creek to the eastern part of the valley and a road nearly completed to Sumpter. During this period the county court has acquired new modern equipment, has established an organization working under central authority, has acquired services of an engineer under full time employment and changed from the contract system to force account system. This equipment and organization is used on county roads as well. This enables the court to get good work done at a low cost, especially on surfacing material. Where local surfacing material is available, very good roads have been built for as low as $1,500 per mile for grading and surfacing.

While the investment in equipment in the two years has been heavy, the cost of grading and surfacing and maintenance is very much decreased and better work done and better planned work. A new heavy patrol grader was recently purchased for use on the market roads in the vicinity of Baker and the old grader will be stationed in Pine Valley.

The work is all under direction of the County Court: Chas. E. Baird, Judge; J. E. McKinnon and Armand Perkins, Commissioners. J. N. Bishop, Resident Engineer for the State Highway Department at Baker, acted in the capacity of County Engineer in 1929 on a part time basis. In 1930, R. W. Leep was appointed County Engineer on a full time basis.

STATUS OF MARKET ROAD SYSTEM AS OF OCTOBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement		
		Surfaced with Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Muddy Creek	4.32	4.32	....	....
2. North Powder-Muddy Creek	4.37	4.37	....	....
3. Sumpter Valley	17.50	14.00	1.00	2.50
4. Robinette	4.13	4.13	....	....
5. Bridgeport	5.80	....	5.80	....
6. Baker-Cornucopia	....	....	....	....
7. Haines-Rock Creek	2.97	2.97	....	....
8. Baker-James School	7.04	3.74	....	3.30
9. Lower Pine Creek	30.00	3.64	....	26.36
10. Medical Springs	20.12	20.12	....	....
11. Richland-New Bridge	2.40	2.40	....	....
12. Wingville	2.01	2.01	....	....
13. Rye Valley	8.50	....	....	8.50
Total in miles	109.16	61.70	6.80	40.66

Muddy Creek Market Road No. 1

In 1930, county forces with a heavy tractor and blade outfit put in deep ditches near the fence lines, widened the roadbed and shoulders to a section 40 feet between ditches and a 22-foot crown instead of 18 feet. This work extended from the junction with Market Road No. 7 at Sta. 228 to Sta. 170 and from Sta. 165 to Sta. 0 at the Muddy Creek School. Granite sand was put on at the rate of 20 to 50 cubic yards per 100 feet as required, width 16 feet. This surfacing material cost 30 to 50 cents per yard on the road according to haul. Cost $2,244.97.

Sumpter Valley Market Road No. 3

Mason Siding-McEwan Section, 5.59 miles of grading and surfacing. Work done in 1930 by county forces from Sta. 0 to Sta. 295 at McEwan. Roadbed 24 feet, surface 16 feet by 8 inches. Cost, $17,720.01.

McEwan-Sumpter Section, 2.00 miles of grading and surfacing incomplete at date of this report. Work done by county forces in 1930 from Sta. 295 at McEwan to Sta. 400. Cost, $2,791.94.

Bridgeport Market Road No. 5

From Sta. 0 at Baker-Unity Highway to Sta. 306 at Bridgeport, 5.8 miles. Graded by county forces in 1929 with a tractor and blade outfit. Cost, $4,652.10. Some work is yet to be done cutting down rolls and filling low places.

Timber Canyon-Cornucopia Market Road No. 6 (Baker-Cornucopia Highway)

Halfway-Carson Section, 5.62 miles of grading and surfacing. Grading done by contract by Biggi and Cotti in 1929 and 1930. Surfacing done by contract by L. F. Ireton in 1929 and 1930. The County Court advertised and awarded the contract and paid for construction work. The State Highway Department did the engineering and after completion has done all maintenance work at their expense. Roadbed 22 feet, surface 16 feet by 6 inches. Cost of grading, $16,285.43; cost of surfacing, $13,290.20; cost of engineering (paid by state), $3,366.75. Total cost to county, $26,875.96.

Haines-Rock Creek Market Road No. 7

In 1930, county forces with a heavy tractor and blade outfit widened from an 18-foot roadbed to 40 feet between ditches with a 22-foot crown from Sta. 89 to Sta. 142. Cost, $214.13.

Baker-Pocahontas Market Road No. 8

James School-Pocahontas section in 1930, completion of surveys from Sta. 0 to Sta. 175. Cost, $230.07.

Lower Pine Creek Market Road No. 9

Halfway-Pine Creek Canyon Section, 3.64 miles of grading and surfacing. Grading done in 1929 and 1930 by Biggi and Cotti. Cost $14,217.44. Surfacing done in 1929 and 1930 by L. F. Ireton. Cost, $10,816.30. Roadbed 20 feet, surface 12 feet by 8 inches. Total cost, including right of way, engineering, etc., $33,052.50.

BENTON COUNTY

Beginning with 1920, a total of $472,690.98 has been made available for market roads in Benton County, of which $227,191.29 was from the state market road appropriation, $216,492.37 from county market road levies and approximately $29,007.32 from county cooperative funds such as bonds, special district levies, general road funds, motor license funds, etc.

Of this amount $453,420.07 has been expended and the following work accomplished: 46.12 miles graded; 46.12 miles surfaced, and major bridges costing $439,671.69, and also maintenance during the last six years costing $13,748.38.

During the past two years $82,484.71 has been spent and the following accomplished: 7.79 miles graded; 7.79 miles surfaced; 37.44 miles maintained.

STATUS OF MARKET ROAD SYSTEM AS OF NOVEMBER 1, 1930

Number and Name	Length in Miles	Surfaced with Rock or Gravel
1. Blodgett-Summit-North and West	10.75	10.75
3. Alpine	6.56	6.56
2. Wren-Alder	3.50	3.50
4. Philomath, South	2.79	2.79
5. North Albany-Wells	6.10	6.10
6. Kings Valley	10.00	10.00
7. Bellfountain	6.42	6.42
Total	46.12	46.12

Benton County during 1928 practically completed the market road system designated in 1925, therefore, early in 1929 the County Court designated two extensions and one new market road to be added to their system. The additions were approved by the State Highway Commission as follows: Market Road No. 1 was extended west from Summit to the Lincoln County line; Market Road No. 3 was extended west from Alpine to Glenbrook and a new Market Road No. 7 extending from the West Side Pacific Highway west through Bellfountain to Dawson. These additions were approximately completed during 1929 and 1930, and under the present plan in Benton County, either the Bellfountain Market Road No. 7 or Alpine Market Road No. 3 will be extended westerly during 1931 and a new market road in the vicinity of Alsea will be added to the market road system.

Benton County is so situated that a small mileage of market roads in addition to the State Highway system adequately serves the people, and the county in addition has most of the county roads surfaced so that nearly every resident has an all-year road.

Surfacing and grading the past two years has been done by contract and the class of work secured has been very good at a reasonable cost, comparatively cheap gravel is available and this has been used in the place of more expensive crushed rock. The county maintenance organization consists of men who handle maintenance of both county and market roads and during the winter months motor graders and tractors are used to blade and shape the surfacing.

The engineering work has been handled by W. C. Galloway, County Engineer, under the direction of County Judge Victor P. Moses and County Commissioners R. C. Von Lehe and A. W. Hawley.

Blodgett-Summit-Lincoln County Line and North Market Road No. 1

Summit-Lincoln County Line section, grading 1.70 miles, Sta. 267 at Summit, to Sta. 356+65 at the Lincoln County line. Roadbed width, 20 feet with an undercrossing of the Southern Pacific tracks. Work by Yunker-Wiecks, contractor. Undercrossing constructed by Southern Pacific bridge forces; work begun June 5, 1929; completed December 12, 1929: Market road funds, $22,201.23; $1,465.75 by Southern Pacific Railroad for undercrossing. Total cost, $23,666.98.

Summit-Lincoln County Line section, removing slides, tile drains and gravel surfacing 1.70 miles, Sta. 267 at Summit to Sta. 356+65 at the Lincoln County line. Also Devitt section, 0.15 mile grading, 20-foot roadbed and gravel surfacing; Sta. 143 to Sta. 149, grading work at Devitt by county forces; removing slides and placing tile by county forces; gravel by East Side Sand & Gravel Co., contractor. Gravel was secured from plant at Albany and delivered by train to Summit, hauled by truck to job. Cost, $8,616, market road funds.

Wren-Alder Market Road No. 2

Harris Bridge over Mary's River near Harris Station, one 75-foot covered Howe truss with four 15-foot timber bents on concrete abutments and pedestals, with fill approaches. Work by county bridge forces; begun June, 1929; completed October, 1929. Cost, $4,615.06, market road funds.

Alpine Market Road No. 3

Alpine-Glenbrook section, grading and gravel surfacing 3.00 miles, Sta. 192 at Alpine to Sta. 347 at Glenbrook. Roadbed 24 feet; surfacing 16 feet wide and 6 inches deep, crushed gravel. Grading work by Yunker-Wiecks Co., contractor; gravel surfacing by H. I. Reese, contractor. Cost grading, $11,714.17, market road funds. Cost surfacing, $8,856.14, market road funds. Work begun May, 1930; completed October, 1930. Total cost, $20,570.31.

Kings Valley Market Road No. 6

Rice Creek Bridge at Sta. 378+50, two 19-foot timber bents, 18-foot width with 4-foot walk, using yew piling, also fill approaches. Work by county bridge forces. Cost, $784.15, market road fund.

Bellfountain Market Road No. 7

Bellfountain-Dawson section, grading 2.97 miles, Sta. 172 at Bellfountain to Sta. 336+75 at Dawson. Roadbed with 24 feet and one 4x6 concrete box culvert. A portion of the grading work was performed by county forces during the fall of 1929; the balance of the work was performed in 1930 by C. U. Enstrom and D. L. Ashton, contractors. Work begun August, 1929; completed September, 1930. Cost, $15,838.14, market road funds. Expended in 1929, $8,332.97; in 1930, $7,505.17.

Bellfountain-Dawson section, gravel surfacing 2.97 miles, Sta. 172 at Bellfountain to Sta. 336+75 at Dawson. Crushed gravel surfacing, 16 feet wide, 6 inches in depth. Work by W. I. Rees, contractor. Work begun August 4, 1930; completed October 1, 1930. Cost, $7,067.51, market road funds.

CLACKAMAS COUNTY

Since the Market Road Act took place in 1920, a total of $2,685,831.64 has been made available for market roads in Clackamas County, of which $661,863.56 was from the state market road appropriation, $665,818.36 from county market road levies and approximately $1,358,149.22 from cooperative funds such as bonds, district special taxes, general road funds, etc. A total of $2,695,188.30 has been expended and the following work accomplished: 256.46 miles graded, 107.05 miles gravel or rock surfaced, 146.26 miles paved, 23.22 miles oiled with heavy oil and 15.36 miles oiled with light oil; maintenance during the past six years costing $65,621.70 and cooperation on State Highway construction to the extent of $8,045.

During the last two years $433,708.36 has been spent and 22.62 miles graded, 23.90 miles surfaced, 5.07 miles paved, 15.09 miles oiled with light oil and 16.80 miles oiled with heavy oil and maintenance costing $27,542.16 performed.

About 1919, voted and passed a bond issue which allotted about $11,000 for paving certain roads with the understanding that the local road districts would grade and place rock on the roads. It was found that the districts were unable to bear this burden so the market road fund has been, on many of these projects, combined with local funds to grade and macadam these projects. The bond funds are at this time exhausted and little paving is done except to close gaps where it was necessary to wait for fill settlement. The only paving project of consequence was between Damascus and Boring which completed paving between Oregon City and the Mt. Hood Loop Highway. On account of lack of funds for paving, the county has started a program of oiling macadam roads and oiling alongside the nine-foot concrete pavements. The oil to date has been of the lighter type such as a surface treatment or a road mix about an inch or so in depth. Some of the roads, however, have been oiled with 80 per cent oil and are showing good results.

The same policy continues of matching on market roads with market road funds, any special tax voted by the district. As nearly all the districts vote these specials and in amounts as low as $300, it makes a great many projects and greatly increases the cost of engineering and other overhead. However, these projects are all carefully located and staked and fit in as a part of the ultimate completed project.

The plan of replacing major bridges continues, the Rock Creek bridge having been replaced in 1929 and Baker's bridge and Goode's Bridge in 1930. This practically completes the program of major bridge replace on the market road system.

The past two-year period has consisted more of reconstructing old low-type roads and extending new construction. The outstanding projects of the two-year period are the completion of pavement from Damascus to Boring and the completion of the macadam road from Molalla to Wilhoit Springs. The county is now fairly well served with good all-year roads. One project of interest is the loop road from Colton to Estacada which connects and ties together the ends of several market roads.

STATUS OF CLACKAMAS COUNTY MARKET ROADS AS OF NOVEMBER 1, 1930

Name and Number	Length in Miles	Classification as to Improvement						Not Graded to Market Road Standards
		Bituminous Pvt.	Concrete Pavement	Heavy Oil	Light Oil	Macadam	Graded to Standard	
1. Swede Stump-Colton	8.74	....	....	....	8.74	....	....	....
2. Estacada-Firwood	10.71	....	1.70	....	....	6.80	....	2.21
3. Eagle Creek-Dover	6.47	....	....	....	....	6.47	....	....
4. Borland	3.10	....	....	3.10	....	....	....	....
5. Silverton	9.28	....	....	....	1.75	7.53	....	....
6. Wilsonville-Ladd Hill	5.87	....	....	....	....	5.00	....	.87
7. Barton-Carver	5.40	5.40	....	....	....	....	....	....
8. Redland Store-Logan	3.96	....	....	....	....	3.96	....	....
9. Monitor-Barlow	10.60	4.60	6.00	....	....	....	....	....
10. Marquam-Canby	13.67	....	12.37	....	....	....	....	1.30
11. Oregon City-Clarks	16.85	....	9.50	....	....	2.00	....	5.35
12. Oswego-Wilsonville	9.39	....	9.39	....	....	....	....	....
13. County Line-Lakeview Villas	3.37	2.00	....	....	1.37	....	....	....
14. Willamette-Tiedman Hill	3.21	....	3.21	....	....	....	....	....
15. Sandy-Pleasant Home (Bluff Road)	6.33	....	....	6.33	....	....	....	....
16. Rock Creek Bridge-Mt. Hood Loop	12.92	10.60	2.12	.20	....	....	....	....
17. Boring-County line	2.00	....	1.00	....	....	1.00	....	....
18. Damascus-County line	3.57	3.57	....	....	....	....	....	....
19. Barton-Eagle Creek-Estacada	8.55	8.55	....	....	....	....	....	....
20. Oregon City-Viola (Abernathy)	11.40	1.50	6.75	....	....	2.00	....	1.15
21. Myers-Beeson	5.84	....	....	....	....	4.00	0.75	1.09
22. Oregon City-Mulino	8.85	....	5.85	3.00	....	....	....	....
23. South End	4.19	....	2.16	2.03	....	....	....	....
24. Oregon City-Brown School	4.29	....	2.50	....	....	1.00	....	.79
25. O'Niel Corner-Molalla-Wilhoit	19.06	....	7.50	....	3.50	8.06	....	....
26. Gribble Prairie-Macksburg	.89	....	.89	....	....	....	....	....
27. Boones Ferry-County line	4.73	....	.50	4.23	....	....	....	....
28. Parkplace-Springwater	18.73	17.00	....	....	....	1.73	....	....
29. Happy Valley-County line	2.08	....	1.50	....	....	....	....	.58
30. Boring-Sycamore	4.01	....	....	....	....	1.00	0.40	2.61
31. Oswego-County line	3.83	....	0.50	3.33	....	....	....	....
32. Molalla-Hubbard	12.97	....	....	1.00	....	6.20	....	5.77
33. Sandy-Eagle Creek	6.36	....	....	....	....	1.50	1.00	3.86
34. Oatfield	4.07	3.60	....	....	....	.47	....	....
35. Estacada-Colton	8.62	....	....	....	....	2.00	....	6.62
36. Lower-Highland	5.82	....	....	....	....	4.00	1.00	0.82
37. River Road	8.00	8.00	....	....	....	....	....	....
38. 82d Street	7.50	7.00	....	....	....	0.50	....	....
39. Rock Creek Bridge-Redland Store	4.38	1.00	....	....	....	3.25	....	.13
40. Eagle Creek Falls	3.69	....	....	....	....	....	....	3.69
Total in miles	293.30	72.82	73.44	23.22	15.36	68.47	3.15	36.84

[CLACKAMAS]

There has been a big improvement in maintenance but more equipment and better organization are still necessary. The maintenance of market roads has been taken away from local district supervisors having only inadequate equipment and brought under the County Court and County Engineer as a central authority. Suitable equipment has been supplied and regular patrols established.

Larger bridges and paving work is contracted but all other work is done by county forces and equipment. The work is handled by the County Court, C. W. Kruse, Judge, and R. A. Wright and W. A. Proctor, Commissioners. D. T. Meldrum is County Engineer.

Swede Stump-Meadowbrook Market Road No. 1

In 1929, graded 32 feet wide Sta. 444 to Sta. 460 and surfaced with crushed gravel 1 inch minus between the same stations, 18 feet wide by 6 inches deep. Resurfaced where necessary from Sta. 0+00 to Sta. 460 with crushed gravel. Oiled with 60-70 per cent road oil from Sta. 0+00 to Sta. 444, some of this being an oil mix about 1½ inches thick. A 6x6 concrete box culvert was built at Sta. 345+80 at a cost of $1,617.18. The total cost of all work except maintenance was $15,778.28, from sources as follows: Market road fund, $7,703.26; donations, $44; O. & C., $8,031.02.

In 1930, additional surfacing was put on Sta. 444 to Sta. 460 and oiled, total cost $2,243.50, all market road funds except donations amount to $24.20. This completes an oil surfaced road from the Oregon City-Molalla Road to Colton.

Estacada-Firwood Market Road No. 2

In 1929, Unit No. 2 was graded and surfaced Sta. 0+00 to Sta. 45; also the bridge over Eagle Creek was worked over and widened at a cost of $2,966.12. Total cost, $19,276.47, divided as follows: Market road fund, $14,745.26; donations, $15.00; O. & C., $4,516.21.*

In 1930, clearing was done from Sta. 240 to Sta. 265, Upper Eagle Creek bridge east. Cost, $329.20. Graded Sta. 240 to Sta. 265 and widened along pavement placed in 1928 from Sta. 15 to Sta. 48; width, 32 feet. Also Jacobsen and Jensen, contractors, paved with concrete 9 feet wide Sta. 48 to Sta. 87. Total cost, $17,881.82, from the following sources: Market road funds, $12,880.82; district, $5,000.00; donations, $1.00.

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* Included in the above is 2 miles of grader work widening and resurfacing beginning at Market Road No. 3, cost $3,800.00.

Eagle Creek-Dover Market Road No. 3

In 1929, a redress of crushed rock was put on between Sta. 0+00 at Eagle Creek and Sta. 340+39. Cost, $1,331.99.

Borland Market Road No. 4

In 1930, this road from Sta. 0+00 to the county line at Sta. 162+99 was surface treated with 80 oil and gravel. Cost, $5,283.28.

Silverton Market Road No. 5

In 1929, the section between Stas. 380 and 390 was graded 32 feet wide and surfaced 18 feet wide by 6 inches deep by county forces at a cost of $2,654.85.

In 1930, the section from Sta. 470 to Sta. 562, was oiled with light oil. Cost, $3,891.50. In this is included 400 cubic yards of 1½-inch gravel and 800 cubic yards of 1-inch gravel for surfacing and bringing the surface to condition before oiling. Estimated cost, $2,400.

Wilsonville-Ladd Hill Market Road No. 6

In 1929, a 6x6-foot concrete box culvert was started at Sta. 290+50 and $896.27 spent, which came from the following funds: Market road, $370.65; district, $400.27; donations, $125.35.

In 1930, the section from Sta. 270 to Sta. 308+89.5, at the intersection just west of Wilsonville, was graded 32 feet wide and surfaced 16 feet wide by 6 inches deep. Cost, $4,714.67; of this amount, $172 was from donations. Also, at Sta. 118+30 a 4x6 concrete cattle pass was built and the cost is included in the above figures.

Redland Store-Fisher Mill-Logan Market Road No. 8

In 1929, the section from Sta. 123 to Sta. 142+20 was graded 32 feet wide and surfaced 18 feet wide. Cost, $1,734.91.

Monitor-Barlow Market Road No. 9

In 1929, $1,933.49 was expended in preparing subgrade and building gravel shoulder 7 feet wide along one side of the 9-foot concrete pavement.

Marquam-Canby Market Road No. 10

In 1929, the subbase was prepared and a gravel shoulder 7 feet wide by 4 inches deep was placed along the 9-foot concrete pavement from Sta. 540+13 to Sta. 615+20. Cost, $6,519.61; included in the above is $1,474.60 for building a frame trestle over Bear Creek at Sta. 359.

In 1930, a contract to the Northwestern Equipment Company for erection of two 90-foot steel spans and 210 lineal feet of timber trestle over Molalla River at Goode's Bridge. County forces will build the approach fills. Estimated cost, $24,077.25. To date estimates have been paid amounting to $6,436.37. This bridge replaces a covered wooden truss many years old and the alignment is brought to tangent instead of several sharp, dangerous curves.

Oregon City-Clarks Market Road No. 11

In 1929, on Unit No. 2, the road was graded 32 feet wide and surfaced 16 feet wide from Sta. 47 to Sta. 73 and surfaced 16 feet wide from Sta. 64 to Sta. 132. Also surfaced 7 feet wide by 4 inches deep between Stas. 435 and 477+59 along 9-foot concrete pavement. The shoulder along the 9-foot concrete pavement from Sta. 0+00 to Sta. 235, Unit No. 1, was oiled with light oil. Total cost, $10,440.76, from the following funds: Market road, $7,989.50; district, $889.95; O. & C., $926.81; general road, $634.50.

In 1930, the shoulder along pavement was oiled 8 feet wide from Sta. 0+00 to Sta. 477 at Clarks. Cost, $4,176.75; from market road fund, $3,617.96; district, $428.56; donation, $130.23.

Oswego-Wilsonville Market Road No. 12

In 1929, curves were widened from Sta. 148 to Sta. 154 and an 18 foot crushed gravel surface put on. Cost, $1,619.69; $78.75 of this mount being donations.

In 1930, the shoulder along the nine-foot concrete pavement was oiled 8 feet wide with light oil. Cost, $2,677.96; this includes 400 cubic yards of gravel used in shaping up and in keeping oil from splashing cars.

County Line-Lakeview Villa Market Road No. 13 (Lower Boone's Ferry)

In 1929, curves were widened and alignment straightened between Sta. 35+50 and Sta. 48, grade widened to 32 feet and surface to 18 feet. Surface was oiled with light oil from Sta. 110 to Sta. 179. Total cost, $4,178.22; market road fund, $3,004.78; district fund, $1,083.44; donations, $90.

In 1930, Cook Hill was graded to 32-foot width and the material used in the fill between the two railroad crossings and surfacing was put down 18 feet by 6 inches deep, from Sta. 130 to Sta. 167. Total cost, $2,630.11; market road fund, $2,165.10, and district, $465.01. Two very dangerous crossings have existed here for years and finally permission was granted by the Public Service Commission to straighten out the alignment and grades. Conditions were very much improved.

Sandy-Pleasant Home (Bluff Road) No. 15

Shaped and oiled with light oil in 1929 from Sta. 0+00 at the Multnomah County line to Sta. 333+37 at Sandy. Cost, $4,200.66. In 1930, an agreement was made between the County Court and the State Highway Department that the Bluff Road would be oiled with heavy asphalt oil and used as a detour during paving operations on the Mt. Hood Loop Highway between the Multnomah County line and Sandy. For permanent value of this oil treatment the County Court were to pay to the State Highway Commission $1,000 per mile and the Highway Department to pay all cost above that amount. As the county has not yet been billed for this amount, it does not show in their records as a cost item.

Rock Creek Bridge-Mt. Hood Loop Market Road No. 16

In 1929, a total cost of $53,856.53 was spent for construction on this road. From market road fund, $41,857.10; district, $2,994.29; bond, $9,004.94.

A contract was awarded to O. M. Olds for construction of 200 lineal feet of trestle to replace the old narrow covered bridge over Rock Creek. Cost, $6,975. Approaches were graded by county forces at a cost of $1,328.46.

A contract was awarded to J. C. Compton for paving with bituminous macadam 16 feet wide by two inches in thickness from Sta. 170 at Damascus bridge to Sta. 370 near Boring. Cost, $45,552.47; this also included paving the approaches to Rock Creek Bridge at Sta. 2 to Sta. 8. A connection between the two paved sections at Boring was not made on account of uncertainty of the railroad crossing in Boring.

In 1930, the route through Boring was agreed upon and the section from Sta. 370 to Sta. 382 grading was done by county forces and surfacing by Jacobsen & Jensen Co., contractors, at a cost of $4,505.66, $1,000 of which was paid from district funds. Residents and property owners in Boring provided right of way and moved building without cost to the county. The entire road from its beginning on the 82d Street Road to the junction with the Mt. Hood Loop Highway is paved except the gap at Boring Sta. 370-390.

Barton-Eagle Creek Market Road No. 19

In 1930, a 4x4 concrete box culvert was installed at Sta. 149 and the grade straightened and widened to 32 feet from Sta. 144 to Sta. 153. Cost, $1,688.39.

Oregon City-Viola (Abernathy) Market Road No. 20

In 1929, graded 32 feet wide and surfaced 16 feet by 6 inches deep from Sta. 547+50 to Sta. 571. Cost, $6,210.15, of which $4,910.15 was from market road funds and $1,300 from district funds.

Myers-Beeson Market Road No. 21

In 1929, county forces graded 32 feet wide and surfaced 16 feet wide by 6 inches deep from Sta. 251+50 (0+00 at Massinger's Corner) to Sta. 268. Cost, $2,931.05, of which $2,212.81 was market road fund, and $718.24 district fund.

In 1930, this work was continued from Sta. 268 to Sta. 292 but is not completed. Estimated cost, $3,398; spent $1,957.50, of which $1,495.14 was market road fund, and $462.36 was district fund.

Oregon City-Mulino Market Road No. 22

In 1929, this road was oiled with light oil and some 80 oil from Sta. 0+00 to Sta. 157+80 and the bridge over Milk Creek at Mulino was paved by J. C. Compton & Co. with bituminous macadam. Cost, $6,755.46.

In 1930, the entire section from Sta. 0+00 to Sta. 157+80 was reoiled with 80 oil and screenings. Cost, $2,973.02.

South End Market Road No. 23

In 1929, the section just south of the city limits of Oregon City from Sta. 0+00 to Sta. 24+00 was graded 32 feet wide and surfaced 16 feet wide by 6 inches deep. Cost, $10,936.89, of which $7,511.34 was market road funds, and $3,425.55 was district funds. This widens to standard width a very narrow, dangerous road along the bluff coming into Oregon City.

Oregon City-Browns School Market Road No. 24

This continuation of previous projects begins 3.56 miles south of city limits of Oregon City. In 1929, graded 32 feet wide and surfaced 16 feet wide by 6 inches deep. Cost, $3,301.77, of which $1,728.57 was market road fund, and $1,573.20 was district funds. This section begins at Sta. 188 and extends to Sta. 199. In 1930, county forces graded 32 feet wide, and put on base rock 16 feet wide by 3 inches deep from Sta. 199 to Sta. 223+70. Cost, $1,513.59, of which $116.58 was market road funds, and $1,397.01 district funds. At the date of this report, work is still under way and will probably be completed in 1930. Estimated total cost, $2,200.

O'Niel's Corner-Molalla-Wilhoit Market Road No. 25

During the past two years the most of the work done on this road has been south of Molalla. In 1929, on Unit No. 3 (0+00 at Molalla) county forces graded 32 feet wide and surfaced 12 feet wide from Sta. 287 to Sta. 324. Bridges were put in at Sta. 294+81 and 319+37. On Unit No. 1, the surface was oiled 16 feet wide from Sta. 158+40 to Sta. 335+78 and at Unit No. 2, the shoulder was oiled 7 feet wide along the 9-foot concrete pavement from Sta. 190 to Sta 270+29. J. C. Compton & Co. paved with bituminous pavement 16 feet wide by 2 inches in depth, the approaches of Wright's Bridge, Sta. 182 to Sta. 197. Total cost of these projects was $19,134.34; all market road funds except $1,896.26, O. & C. funds.

1930, grading was done by county forces on Unit No. 3, south of Molalla from Sta. 134 to Sta. 287 and from Sta. 324 to Sta. 367; width 32 feet. Cost, $14,326.37, of which $3,395.06 was district funds. This project, estimated to cost $20,094, is not complete and will probably be surfaced yet this season. Concrete box culverts were put in as follows: Double 7x7 box at Sta. 224+50; double 5x8 box at Sta. 232, and a double 6x9 box at Sta. 155+30. On Unit No. 2, Sta. 197 to Sta. 270+30, the shoulder along the 9-foot concrete pavement was given an oil treatment, using 80 oil which cost $765.40 and is included in above summary.

Park Place-Springwater Market Road No. 28

Cape Hort section, Sta. 147 which is 2.72 miles from Parkplace Bridge to Sta. 222 at the end of pavement, slide removal and additional surfacing, in 1929. Cost, $5,750.08; all market road fund except donation, $25.05.

Boring-Sycamore Market Road No. 30

In 1929, 0.2 mile of grading and surfacing from Sta. 139, which is 2.59 miles from initial point of this road at 0+00=Sta. 17+70 from Multnomah County line on Market Road No. 18 to Sta. 149. Graded 32 feet wide and surfaced 18 feet wide by 6 inches deep. Cost, $968.91, of which amount the district paid $445.50. In 1930, 0.9 of a mile of grading from Sta. 45 to Sta. 92 was done by county forces. Graded 32 feet wide and cost (incomplete) $2,076.46, of which district funds paid $428.65. Estimated cost for grading and surfacing complete is $9,776.

Oswego-County Line (Upper Boone's Ferry) Market Road No. 31

In 1929, on Unit No. 2, widened curves and straightened alignment from Sta. 25 to Sta. 29 and from Sta. 42 to Sta. 50. Cost, $981.04. Also put on heavy oil treatment, using 95 oil, from Sta. 0+00 to Sta. 77+27, Unit No. 1, and from Sta. 0+00 to Sta. 108+76, Unit No. 2. Cost, $10,849.93, of which $20.54 was donated.

In 1930, oil treatment with 80 oil from Sta. 0+00 to Sta. 109. Cost, $2,288.81.

Molalla-Hubbard Market Road No. 32

In 1929, county forces graded 32 feet wide and surfaced 18 feet wide by 6 inches deep from Sta. 75 to Sta. 180 on Unit No. 3, which begins at Sta. 54+46 at Molalla. Included in this work is installation of a 72-inch culvert at Sta. 177+50 and a double 6x6 concrete culvert at Sta. 160+50. Unit No. 2 from 0+00 on Market Road No. 5 to Sta. 49+74.3 at Molalla was surface treated with heavy or 80 oil. Total cost in 1929, $13,635.41, of which $100.83 was paid from district funds.

In 1930, county forces graded 32 feet wide and surfaced 18 feet wide by 7 inches deep from Sta. 54 to Sta. 220+24 which point is the junction with Market Road No. 1. This work is on Unit No. 3 and includes finishing up the 1929 section from Sta. 75 to Sta. 180 and completes the section of the loop road from Molalla to Colton. Also, county forces graded and surfaced to the same standard from Sta. 96+24 (0+00 on Market Road No. 5 one mile west of Molalla) to Sta. 115, on Unit No. 1. A survey was made from Sta. 202+83 to Sta. 468 at the Marion County line. Total cost for 1930 work, $20,432.40.

Sandy-Eagle Creek Market Road No. 33

In 1929, a 4x4 concrete box culvert was built at Sta. 339 (0+00 at Sandy) and fill made by county forces. Culvert cost $672.42 and grading, including surfacing, cost $772.09; total cost, $1,445.45.

Estacada-Colton Market Road No. 35

In 1929 and 1930, county forces graded and surfaced from Sta. 320 (0+00 at Colton) to Sta. 408, including 8x8 concrete box culverts at Sta. 343 and Sta. 353. Graded 32 feet wide and surfaced 16 feet by 6 inches. Total cost in 1929 was $26.681.38, of which $7.47 was donation. In 1930, the above section was finished and a section from Sta. 81 to Sta. 95+77 was graded. Total cost in 1930, $8,632.15. This road is a loop road from Molalla to Sandy.

Lower Highland Market Road No. 36

In 1929, graded 32 feet wide and surfaced 12 feet wide by 6 inches deep a section 0.13 mile long from Sta. 111 (Sta. 269+77 ends at Sta. 237+07 on Market Road No. 21) to Sta. 123. Cost, $3,865.87, of which $1,218.24 was district funds.

In 1930, graded 32 feet wide and partially surfaced 16 feet wide from Sta. 40 to Sta. 47 and built a 4x4 concrete box culvert at Sta. 53+50. Culvert cost, $1,003.51. Total cost, including the culvert, was $2,211.94, of which amount district fund paid $984.25.

82d Street Market Road No. 38

In 1929 and 1930, work was continued and completed on Pope Hill by county forces. The roadbed was graded 40 feet wide and surfaced 30 feet wide by 7 inches deep from Sta. 264 (0+00 at Oregon City) to Sta. 287. In 1929, $382.29 was spent in clearing, and in 1930, $8,500.33 was spent in grading and surfacing and building a double 4x5 concrete box at Sta. 261.

The approaches on the Parkplace Bridge were redecked and widened at a cost of $653.67.

Rock Creek Bridge-Redland Store Market Road No. 39

In 1929, county forces graded 32 feet wide and surfaced 18 feet wide by 6 inches deep from Sta. 65 to Sta. 82 and from Sta. 96 to Sta. 102. Cost, $4,183.42, of which $790.58 was paid out of the district fund.

In 1930, graded 32 feet wide and surfaced 12 feet wide by 6 inches deep from Sta. 102 to Sta. 172. Cost, $9,776.83, of which amount $500.51 was paid by district funds.

In June, 1930, a contract was awarded to Lindstrom & Feigenson for constructing a new bridge at Baker's Bridge. The span is a steel span 180 feet long with a concrete deck 24 feet wide and with a sidewalk on each side. The estimated cost of this bridge is $38,703, and to date $25,492.57 has been spent.

CLATSOP COUNTY

Since the Market Road Act took effect in 1920, a total of $1,242,099.34 has been made available for market roads in Clatsop county, of which $434,744.84 has been from the state market road appropriation, $397,208.11 from county market road levies and approximately $410,146.39 from cooperative funds such as district special tax, district, motor license, general road fund, etc. Of this amount $1,218,574.40 has been expended and the following work accomplished: 49.60 miles graded; 34.40 miles rock or gravel surfaced; 14.90 miles paved; 6.50 miles resurfaced and maintenance during the past six years costing $109,234.67.

During the last two years $267,302.54 has been spent and 4.00 miles graded, 16.40 miles surfaced, 6.50 miles resurfaced and maintenance cost $59,909.07.

STATUS OF MARKET ROAD SYSTEM AS OF OCTOBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement				
		Paved with Bituminous Pavement	Paved with Concrete	Surfaced with Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Miles Crossing-Olney	11.40	....	11.40	....	....	....
2. Cannon Beach	13.80	....	....	7.00	2.14	4.66
3. Svenson South	3.00	1.20	....	.50	....	1.30
4. Walluski Loop	3.70	....	....	3.70	....	....
5. Hillcrest	5.50	....	1.20	2.30	....	2.00
6. Nehalem	37.30	....	14.20	15.90	3.00	4.20
7. Lewis and Clark	13.90	0.40	3.50	5.00	....	5.00
Total in miles	88.60	1.60	30.30	34.40	5.14	17.16

During the past two years nearly all work of major importance has been on the Nehalem Market Road No. 6 and the Cannon Beach Market Road No. 2. The program has been changed from a program of concrete pavement to grading and macadam in order to complete the roads sooner. It is expected that in two more years the Nehalem Market Road No. 6 will be all graded and surfaced to modern standards to the Columbia County line and ready for oiled surface. Arrangements have been made for the county to pay $25,000 per year for four years to the State Highway Commission and the commission will take over and complete the coast route around Cannon Beach and Neah-Kah-Nie mountain; the county will then take over maintenance of the present highway.

A great improvement has been made in organization and equipment in the past two years. Suitable maintenance and other equipment has been acquired and the patrol system established. Most of the construction work is contracted. The work of construction and maintenance is handled directly by the County Engineer, Arthur F. Danielson, with the County Court establishing policy, funds, etc., and maintaining general supervision. The County Court is composed of Guy Boyington, Judge; Jas. Elliot and Wm. Larson, Commissioners.

Cannon Beach Market Road No. 2

In 1929, a contract was awarded to Carl Habecost for widening the street to the sidewalk lines and building wooden sidewalks in Ecola. This was necessary to handle the summer traffic. Cost, $5,637.20. A contract for removing slides from Silver Point at Sta. 365 to Sta. 785 at Humbug Point and grading from that station to Hug Point at Sta. 723 and a connection to the beach at Sta. 719 was awarded to Graham Bros. & Medley. Estimated cost, $67,417.60. The contract was awarded on a two-year basis and was completed in September, 1930. Cost in 1929, $39,235.79; cost in 1930, $27,931.34; total cost, $67,167.13.

This will eliminate the dangerous beach road around Hug Point where so many cars have been lost in the surf and will permit travel to the beaches south of Hug Point at nearly any stage of tide. In 1930, a contract for resurfacing from Cannon Beach Junction at Sta. 17+43 to 0+00 to Sta. 336 and for base surfacing from Sta. 336 to Sta. 364 at Silver Point. This resurfacing was done with the expectation of oiling the road in 1930 but it was not possible to secure sufficient compaction. The contract was awarded to Rigdon Bros. and was completed in July, 1930. Cost, $9,927.82.

Nehalem Market Road No. 6

In 1929, a contract was awarded to A. B. Gerding for slide removal and surfacing from the end of pavement at Sta. 737 to Sta. 1428 about one-half mile east of Jewell. The contractor used the county's crusher at Fish Hawk Falls. A 4-inch top of 1-inch minus rock was put on existing rock surface after patching was done. On new work a 7-inch base of 2½-inch material and a 3-inch top of 1-inch minus material was used. The work was finished in November, 1929, and cost $68,245.30.

In 1930, a grading contract from Sta. 1428 near Jewell to Sta. 1708 was awarded to Johnston, Hauser and Johnston and completed early in October. Cost, $32,223.25. A contract was awarded to A. B. Gerding for surfacing with rock from the county plant at Fish Hawk Falls from Sta. 1428 to Sta. 1552 and resurface certain places between the Fish Hawk summit at Sta. 1009 and Jewell. Surface 18 feet wide, base 7 inches of 2½-inch and top 3 inches of 1-inch rock. Cost, $33,100.72.

Lewis and Clark Market Road No. 7

In 1929, $4,763.29 and in 1930, $5,306.60 special district funds was spent in placing additional rock on the road in weak places. The crushing was contracted and all other work was done by county forces.

COLUMBIA COUNTY

Beginning in 1920 a total of $882,539.52 has been made available for market roads to Columbia County, of which $267,043.14 was from the state market road appropriation, $300,943.14 from county market road levies, and approximately $314,553.24 from cooperative funds such as district, district special tax, O. & C., motor license, general road fund, etc. Of this amount $850,581.59 has been expended and the following work accomplished: 85.05 miles graded; 78.80 miles surfaced; 4.85 miles of asphalt penetration macadam; 1.20 miles paved; major bridges costing $34,622.69, and maintenance during the six-year period cost $42,903.50.

During the past two years $103,450.78 has been spent and the following work accomplished: 5.86 miles graded; 6.69 miles surfaced; 4.85 miles of penetration macadam; $25,017.69 for major bridges, and maintenance cost $33,282.30.

STATUS OF MARKET ROAD SYSTEM, AS OF OCTOBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement			
		Paved with Concrete	Asphalt Penetration Macadam	Surfaced with Rock or Gravel	Not Graded to Market Road Standards
1. Pittsburg-St. Helens	25.27	0.40	....	24.87	....
2. Rainier-Apiary	19.63	....	....	6.33	13.30
3. Mist-Clatskanie	12.20	....	....	12.20	....
4. Nehalem Highway	32.30	.80	4.85	23.65	3.00
5. Vernonia-Buxton	4.70	....	....	3.90	0.80
6. Delena-Quincy Loop	11.20	....	....	6.50	4.70
7. Beaver-Basin	7.00	....	....	....	7.00
8. North Scappoose Creek	8.00	....	....	1.35	6.65
9. Liberty Canyon	6.00	....	....	....	6.00
Total in miles	126.30	1.20	4.85	78.80	41.45

During the past two years, the Mist-Clatskanie Road has been completed and makes a modern road connecting the Nehalem Valley and Columbia River sections. The Nehalem Highway is all rock surfaced but is still narrow and rough in places. Work of realigning and widening continues as funds are available. Asphalt penetration macadam was put down in the vicinity of Vernonia where traffic has become so great that it is beyond the limits of macadam to handle it. Maintenance is greatly improved and the county has plenty of good equipment for this work.

The work is all under direction of the County Court, John Philip, Judge; J. N. Miller and T. B. Mills, Commissioners. J. W. Barney was County Engineer and Roadmaster in 1929 and when he resigned to become County Engineer of Washington County, was succeeded by L. R. Chandler.

Pittsburg-St. Helens Market Road No. 1

In 1929, near Trenholm from Sta. 717 to Sta. 735, a bridge was replaced with a 4-foot pipe culvert and the grade widened to 24 feet and surfaced 16 feet wide by 8 inches deep. Cost, $874.57, of which $39.13 was from the general road fund.

At Sta. 948+60 a steel I-bean bridge of heavy type was substituted for a light type truss and approaches filled and surfaced. Cost, $2,004.22, general road fund.

In 1930, $5,000 was spent in widening with a blade outfit and resurfacing small units.

Rainier-Apiary Market Road No. 2

In 1929 and 1930, a location survey was made from the end of construction at Sta. 334+30 on Unit No. 1, to an intersection with the Nehalem Highway near the mouth of Oak Ranch Creek. The survey runs through a very broken, timbered country, is 13.3 miles long and cost $9,079.20. This road would give an outlet from the highway in Washington County and the Nehalem Valley to the Longview Bridge at Rainier. It was expected that some outside funds would be available for this project. The estimated cost to grade and surface is about $330,000.

Mist-Clatskanie Market Road No. 3

In 1929, county forces graded and surfaced from the end of the 1928 improvement at Sta. 42 to Sta. 0+00 to Sta. 175+50 at Mist. Roadbed 24 feet, surfaced 16 feet wide by 8 inches deep. Cost, $36,292.70, of which amount surfacing cost $15,642.69. This completed the Mist-Clatskanie Road to modern standard from the Nehalem Valley to Clatskanie.

Nehalem Market Road No. 4

In 1929, county forces graded and surfaced from the Taylor Bridge to Treharne Corners, Sta. 48 to Sta. 98, roadbed 24 feet, surface 16 feet wide by 8 inches deep. Cost, $6,163.75, of which $325.53 was general road and $5,838.22 was district funds.

County forces graded and surfaced from the Erickson Bridge at Sta. 193 down river to Sta. 290, roadbed 24 feet, surfaced 16 feet wide by 8 inches deep. Cost, $6,199.10, of which $207.64 was general road and $5,991.46 was district funds. Along the bluff from Sta. 225 to Sta. 240, some work was done but the project was not completed.

In 1930, county forces completed grading and surfacing from Sta. 238 to Sta. 258. Cost, $4,012.13, of which amount $40 was paid from the general road fund and $3,972.41 from district No. 8 special tax. Total cost to grade and surface from Sta. 193 to Sta. 290 is $10,211.41.

Pittsburg Bridge contract was awarded to O. N. Pierce in September and completed in November, 1929. This bridge was designed by the Oregon State Highway Commission and is a 120-foot reinforced 3-panel continuous type span with a 24-foot deck. Cost complete, $9,336.57, divided as follows: Bridge contract, $8,584.40; detour, $212.31; fill approaches, $420.25; engineer, $119.61; all paid from general road fund.

In 1930, Columbia County purchased a pressure distributor and a retort for handling asphalt for penetration macadam. A county crew was organized under Frank B. Hurt, who has had years of experience on paving and oil work, and placed 1½-inch penetration macadam, 95 asphalt oil, using State Highway specifications. This crew placed this penetration macadam 18 feet wide from Vernonia upriver 2.10 miles and downriver from end of the concrete pavement east of Vernonia

1.85 miles, and from the end of pavement near the Rock Creek bridge in Vernonia to Mile bridge, .90 mile. Cost, $13,716.65, of which amount $5,469.65 was market road, $1,850 was district No. 16 special tax, and $6,397 was district No. 9 special tax.

In 1930, a contract was awarded to the Kuckenburg-Wittman Co., for construction of a reinforced concrete bridge over Rock Creek in Vernonia. The bridge was designed by the State Highway Department, Bridge No. 1508, and consists of two 42½-foot panels and 55-foot panel over the stream, deck 27 feet wide and with two 5-foot sidewalks. Cost complete, $13,466.90, which was all paid out of the general road fund except $125 paid by the city of Vernonia.

In 1930, $11,873.90 of Road District No. 9 funds were spent under the direction of the district supervisor from the Washington County line to the district line down river from Pittsburg in widening, slide removal, additional surfacing, maintenance, etc. Records of these expenditures were not kept by the supervisor so that they can be segregated to different classes of work or by location.

Vernonia-Buxton Market Road No. 5

In 1929, county forces surfaced with rock from Rocky Point Quarry from the Washington County line at Sta. 172+11 to Sta. 128 completing surfacing on the unit from Sta. 0+00 to Sta. 172+11. Surfaced 16 feet wide by 6 inches deep. Cost, $4,268.48, all paid by district funds.

In 1930, county forces graded and surfaced from Sta. 0+00 (north end of county line north limit) to Sta. 34+00, roadbed 24 feet, surfaced 16 feet wide by 8 inches deep. Cost, $3,485.88, of which $3,385.88 was district funds and $100 was general road fund.

Delena-Quincy Loop

No market road funds have been spent on this road but in the last four years, it has been improved with district funds under the local supervisor. No report of district funds expended is available. The road is rocked from 12 to 16 feet wide from the Alston corner on the Columbia River Highway to Mayger, 6.50 miles. Alignment and grades are to good enough standard for this road. From Mayger to the junction with the Columbia River Highway (3.2 miles east of Clatskanie), is fair but needs ditching and fine rock resurfacing.

COOS COUNTY

Since the Market Road Act took effect in 1920, a total of $1,267,035.03 has been made available for market roads in Coos County, of which amount $371,881.62 was from the state market road appropriation, $428,396.96 from county market road levies, and approximately $466,756.45 from cooperative funds such as bonds, district specials, motor license, O. & C., general road fund, etc. A total of $1,369,582.07 has been expended and the following work accomplished: 192.4 miles graded; 182.0 miles surfaced; maintenance during the past six years costing $84,241.89 and cooperation on state highways to the extent of $42,290.

During the past two years $204,436.86 has been spent and the following work accomplished: 16.58 miles graded; 32.58 miles surfaced; and maintenance costing $36,840.13.

STATUS OF MARKET ROAD SYSTEM, AS OF NOVEMBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement		
		Macadam	Graded to Standard	Not graded to Standard
1. Myrtle Point-Sitkum	20.00	20.00	....	....
2. Norway-Lee-Fairview	12.00	12.00	....	....
3. Allegany	7.00	6.00	....	1.00
4. Myrtle Point-Lampa	12.00	9.50	....	2.50
5. North Bank	17.52	17.52	....	....
6. Coos River	5.90	5.90	....	....
7. North Bend-South Slough	7.50	7.50	....	....
8. Bear Creek	7.37	4.48	1.18	1.71
9. Coquille-Fairview	13.00	13.00	....	....
10. Coquille-Fat Elk-Dement Ranch	8.80	7.80	....	1.00
11. Two Mile	5.50	2.50	....	3.00
12. Myrtle Point-Cooper Bridge	3.50	3.50	....	....
13. Lee-McKinley	7.00	7.00	....	....
14. Lakeside	7.00	1.50	....	5.50
15. North Slough	2.50	2.50	....	....
16. Haynes Slough	6.00	4.00	....	2.00
17. Larson Slough	4.00	2.50	....	1.50
18. Ross Slough	5.30	3.30	....	2.00
19. Catching Creek	8.00	8.00	....	....
20. Myrtle Point Broadbent	7.50	7.50	....	....
21. Hoffman-Powers	18.00	18.00	....	....
22. Fishtrap Landing	2.00	2 00	....	....
23. Catching Slough	6.80	5.00	1.80	....
24. Gravelford-Fox Bridge	3.70	1.00	.70	2.00
25. Lundgren	5.30	3.64	1 66	....
26. South Coos River	6.30	1.90	2.41	1.99
27. Kentuck-Glasgow	5.80	1.00	1.00	3.80
28. Willanche Inlet	3.50	....	....	3.50
29. Bradley Lake	3.90	1.30	2.60	....
30. Rink Creek	1.20	1.20	....	....
Total in miles	223.89	181.04	11.35	31.50

The two-year period just passed has been another period of great results in Coos County. Construction and maintenance crews have been better equipped and better organized. The work is well done and the cost very reasonable. The Coos County organization is one of the best in the state. While many of the roads are still narrow, the alignment is good and they serve the purpose. On account of heavy timber and rough country and often sandstone and many streams, construction is very expensive. Many small bridges have been built to modern standard or replaced by culverts and fills made. The past few years have seen a complete change in transportation as formerly nearly all travel and hauling was by boat on the rivers and bays. At this time roads are completed and travel and hauling are done in the modern way with corresponding accommodation. In one case, children leave for school one and one-half hours later in the morning and return one hour earlier in the evening.

The Coos River road system is now opened up but will need widening and resurfacing. A ferry has been established near the Austin place to serve the Allegany traffic. Enough gravel has been put on to carry traffic during the winter. A ferry has also been placed in operation to serve South Coos River. There remains yet to be placed a ferry and approaches to handle the sections between the rivers.

The North Bank road has been opened clear through to Bullards ferry and surfaced. After river boats stopped running, people along here had much difficulty in getting products out but are nicely served since the road is completed.

The road department is organized under and handled by W. A. Gilbert, County Engineer and Roadmaster, under direction of the County Court: D. F. Thompson, Judge; Jos. T. Jenkins and Wm. Hagge, Commissioners.

Myrtle Point-Sitkum Market Road No. 1

In 1929, county forces graded from Sta. 33+15 (0+00 on the Coos Bay Highway) to Sta. 43 and removed slides to Sta. 194 north of Cooper's Bridge. Cost, $5,852.93. Awarded contract to I. G. Bingham for surfacing from Sta. 33+15 to Sta. 194 with bar run gravel. Cost, $3,106.88. The Brewster Valley section between Dora and Sitkum was resurfaced and ditches cleaned. Cost, $9,354.10, all district funds. In 1930, additional rock surfacing was put on and several points widened. Cost, $5,023.65, district special fund.

Allegany Market Road No. 3

In 1929, a contract was awarded to Tofte and Pinkerton to grade a 16-foot class "C" roadbed from Sta. 190+50 (0+00 at Allegany) to Sta. 205. Cost, $2,953.12, district special tax.. A force account agreement was made with the Hauser Construction Company to dump waste rock from their jetty quarry into the fill from Sta. 205 to Sta. 210+80, 10,200 cubic yards being put in the fill for $806.83, district special tax.

In 1930, a contract was let to the Hauser Construction Company to build the fill from Sta. 233 to Sta. 258 from waste rock from the jetty quarry. Cost, $3,519.13, district special tax. In July, Hillstrom Brothers were awarded a contract to construct a wood truss span and approaches at Allegany from Sta. 2+10 to Sta. 5+40. The job was completed August 30 and cost $9,842.84, of which $3,626.25 was market road fund, $88.50 general road and $6,138.09 special district tax. Temporary trestle approach was put in beyond the permanent approaches and will be filled next year. In August and September, 5,008 cubic yards of South Fork gravel, 1½-inch minus, was placed on the road between Sta. 6 at Allegany and Sta. 260 at the Condron ranch. Cost,

$19,481.95, of which amount $7,616.68 was market road funds, $6,850 general road and $5,015.27 special district tax. This gravel was put on 8 feet wide and 4 inches deep. The high cost per yard of this gravel is in shipping from South Fork to Marshfield, unloading onto scows, towing scows up river, loading onto trucks and then hauling to the job. About two years ago, a quarry was established on the south side of Coos River at Austin's, but the rock is too dirty and too soft for so wet a country. There is a better quarry on the north side near Austin's which will probably be opened up next year.

Myrtle Point-Lampa Market Road No. 4

In 1929, $1,037.30 in maintenance and gravel was donated to this road by log haulers. Another project was placing crushed gravel 8 feet wide by 4 inches deep from Hall's Creek road to Arago crossroads, Sta. 60 to Sta. 105. Cost, $752.55.

In 1930, a contract was let in May to I. G. Bingham to grade a 14-foot class "C" road from the Radabaugh ranch at Sta. 86+55 to the W. F. Miller ranch at Sta. 110. The work was completed in June and cost $1,696.90, of which amount $497.80 was market road fund and $1,199.10 was district special tax.

North Bank Market Road No. 5

In May, 1929, a contract for grading and constructing a pile bulkhead between Sta. 810 and Sta. 829. Work was completed in August. Cost, $5,151.80. A grading contract was awarded to Wm. Wilkins in May to grade from Sta. 829 to Sta. 901. Roadbed 16-foot class "C"; completed in August; cost, $14,309.30. A contract was let in June to D. P. Plymale to grade a 16-foot class "C" roadbed from Sta. 901 to Sta. 925, which connects with an existing road leading to Bullards ferry. The job was completed in September and cost $4,351.98. County forces graveled Sta. 544 at the Sam Clinton ranch to Sta. 746 at Offield Creek 8 feet wide by 8 inches deep and resurfaced from Hatchet Slough at Sta. 344 to Sta. 544, 1,836 cubic yards from the Clinton pit, 777 cubic yards from the Nulf pit and 3,480 cubic yards from the Barrows pit. The work was done with a county power shovel and trucks and cost $10,881.01, of which amount $225.30 was market road fund and $10,662.71 district special tax.

In 1930, county forces widened the fill from Sta. 746 to Sta. 918, and surfaced with pit-run gravel from the Barrows pit. Cost, $5,804.10, of which $800 was paid from the market road fund and $5,004.10 from the district special tax. This opens up a surfaced road from the highway near Coquille to Bullards ferry, a distance of 18 miles.

North Bend-South Slough Market Road No. 7

The surfacing material from the Coos River quarry was too soft so 2,222 cubic yards of Umpqua gravel was put on to harden the surface from Sta. 29+82 to Sta. 247+00. The road was then surfaced for one mile with two lifts of Bitumuls penetration type and 0.70 mile of Bitumuls surface treatment. This road is the only road from Marshfield and North Bend to the beaches and carries a traffic of about 1,400 cars per day. It will probably be necessary in a short time to put down a penetration macadam or pavement.

Bear Creek Market Road No. 8

In 1929, grading was continued south from Sta. 109+50 to Sta. 91. The roadbed was graded 16 feet wide, class "C", and cost $679.83, of which amount $479.92 was from the market road rund and $199.91 from district special tax.

In October, 1929, the County Court designated, and the Highway Commission approved, an extension north from the Roosevelt Highway at the Bear Creek Road intersection to Sta. 43. In October, 1930, a further extension from Sta. 43 at Parkersburg to Prosper was approved. As boats have discontinued the river run, this leaves several ranches with no outlet.

In 1926, D. P. Plymale was awarded a contract to grade from Sta. 23+46 to Sta. 43, and the work cost $6,911.23. In 1927, county forces hauled in 14,760 cubic yards of material and made the fill from Sta. 0+00 at the highway to Sta. 23+46 at a cost of $5,585. In 1930, county forces placed gravel 8 feet wide by 6 inches deep from Sta. 0+00 to Sta. 43. No cost is available as this work is being done after close of the report year.

Coquille-Fairview Market Road No. 9

County forces are widening cuts and straightening up the alignment with a power shovel, installing concrete box culverts to replace bridges at Stations 134+50, 136+25 and 149, and surfacing with Fairview quarry rock from the County Farm at Sta. 130 to the summit at Sta. 491+40. No cost is available as the work is being done after close of the report year.

Coquille-Fat Elk-Dement Ranch Market Road No. 10

In 1929, Hal Baxter, a logger, donated South Fork gravel, 1-inch minus, to surface 8 feet wide by 3 inches deep from Sta. 0+00 at Roosevelt Highway to Sta. 58 at Fat Elk. Cost, $954.76.

In 1930, a contract to grade from Sta. 163 at (0+00 at Roosevelt Highway) the Russ Investment Company ranch to Sta. 195 at the Robinson ranch was awarded to Peart Brothers. Roadbed 16-foot class "C". Cost, $4,559.39, of which $1,500 was from market road funds and $3,059.39 from district funds. Also, in 1930, the long bridge from Sta. 109 to Sta. 116, about 2 miles south of Coquille, was replaced by a shorter bridge and a fill. The trestle was built by Hillstrom Brothers from Sta. 110+35.5 to Sta. 110+74.5, 20-foot roadway. Cost, $759.82. The fill and surfacing were put in by county forces and cost $1,119.38. Total cost, $1,879.20, all paid from the general road fund.

Ross Slough Market Road No. 18

In October, 1929, an extension was designated by the County Court and approved by the Highway Commission to Sta. 280+16 on the Coos City-Sumner road. It is intended to do away with the old drawbridge at Coos City on completion of this road. In 1929, county forces surfaced with Coos River rock from Sta. 0+00 at Catching Inlet Bridge to Sta. 181+50, 8 feet wide by 8 inches deep. Cost, $7,108.05, of which $5,000 was from market road funds and $2,108.05 from special district tax.

In 1930, a contract was let to C. A. Bushong to clear from Sta. 186+50 to Sta. 280+16 on the Sumner road. Cost, $2,928.54. Also in 1930, county forces widened from Sta. 0+00 to Sta. 29 from a 12-foot class "C" road to 16-foot class "C" roadbed in anticipation of this road soon taking the Sumner road travel. Cost, $971.41, all district special tax.

Haines Slough Market Road No. 16

In 1929, 288 cubic yards of gravel were put on as additional surfacing from the highway east. Cost, $1.078.96, of which amount $356.58 was from the market road fund and $722.38 was from district special tax.

North Slough Market Road No. 15

In 1930, three cedar box culverts were built and backfilled between the state highway at Hauser and the upper end of the dyke. Cost, $788.43, general road fund.

Larson Slough Market Road No. 17

In 1929, additional surfacing was put on with rock from the Coos River quarry from the highway east. Cost, $811.61, all market road fund.

Catching Creek Market Road No. 19

On July 15, 1930, a contract was awarded to I. G. Bingham to widen grade and replace a bridge with a 3x3 cedar box culvert and fill, grade 30 feet wide. Work was completed September 1 and cost $1,498.63, general road fund. This work extended from Sta. 0+00 to Sta. 19+00.

Myrtle Point-Broadbent Market Road No. 20

In 1929, county forces replaced all woodwork in the deck and truss in the Broadbent bridge. Cost, $3,325.27, general road fund.

Hoffman-Powers Market Road No. 21

In March and April, 1929, county forces rebuilt the pile bridge at Sta. 649+43 to Sta. 650+53 near Powers. Width of deck 18 feet, class "B" loading. Cost, $2,867.62, general road fund.

Catching Slough Market Road No. 23

In September, 1929, I. G. Bingham, contractor, graded a 16-foot class "C" roadbed from Sta. 239 to Sta. 256, and also built within these limits a pile bulkhead. Cost, $2,346.10, all district funds. In 1930, county forces replaced Gunnell Slough bridge at Sta. 79+80 to Sta. 80+90 and Stock Slough bridge from Sta. 124+80 to Sta. 126+30 with culverts, tide boxes and fills. Cost, $892.70, district funds. Also, county forces surfaced from Sta. 244 to Sta. 258 with 111 cubic yards of South Fork gravel. Cost, $420.20, district funds.

Gravelford-Fox Bridge Market Road No. 24

In 1929, county forces fine-graded from Sta. 0+00 at intersection with Market Road No. 2 at Fox Bridge to Sta. 52+50 and surfaced 8 feet wide by 6 inches deep with 1½-inch crusher run Fairview rock. Cost, $3,408.23, market road fund. This road was designated as a market road late in 1928, and the grading between Sta. 0+00 and 52+50 had been done as a county project in that year.

July 1, 1930, a contract to grade Sta. 143 to Sta. 182 at Gravelford, 16-foot class "C" roadbed, was awarded to Peart Brothers. The contract was completed August 15, 1930, and the work cost $2,978.06, of which amount $1,000 was paid from the general road fund.

Lundgren Mountain Market Road No. 25

This road was made a part of the market road system late in 1928. County records show that in 1927, $131.36 from the bond fund was spent in betterment; in 1928, $2,039.88 from the bond fund was spent in widening and surfacing and, in the same year, $4,462.10 from the general road fund was spent in widening from the highway to the summit of Lundgren mountain.

In 1929, South Fork gravel surfacing was continued from the end of 1928 work at Sta. 63+50 to Sta. 192+00 at the summit. This project cost $3,760.80, of which $1,095.46 was market road, $801.13 district, and $1,864.21 bond funds.

In 1930, the road was widened with a power shovel from Sta. 192 at the summit of Lundgren Mountain to Sta. 279+17 at the end of Market Road No. 25, and at the junction with Market Road No. 14. Total cost, $5,836.10, of which $1,967.14 was market road, $2,136.76 district special tax, $1,246.33 district and $476.87 general road fund. Surfacing has been started and will be completed this fall. The completion of this road provides an outlet for a number of ranches south and east of Ten Mile Lake and eliminates the immediate necessity for constructing Market Road No. 14 on the west side of the lake which would be a very expensive project.

South Coos River Market Road No. 26

This road was placed on the market road system in October, 1929. In 1930, a contract was let to G. C. Johnson for grading from Daniels Creek at Sta. 19 to Idlewood Lodge at Sta. 246+36, 16-foot class "C" roadbed. The project is about 90 per cent complete and will be finished this year. Estimated cost $43,251.29, cost to date $26,344.99, of which $12,485.26 was from the market road, $9,066.36 from general road and $4,793.37 from district special tax.

County forces surfaced with South Fork crushed gravel from the recently installed ferry at Sta. 19+20 to Sta. 119+00, 8 feet wide by 4 inches deep. Cost $3,891.24, of which $3,000 was market road, $332.90 district special tax and $558.34 district fund. This gravel was put on to let several ranches have access to markets this winter, with intention of completing surfacing next year.

Kentuck-Glasgow Market Road No. 27

In April, 1930, a contract was awarded to the Coos Bay Dredging Company to widen the dyke road from Sta. 55 to Sta. 15 from 12 feet to 18 feet. Work completed May 15, 1930, and cost $1,941.87, of which $943.04 was market road and $998.83 district fund.

Bradley Lake Market Road No. 29

This road was designated and approved as part of the Coos county market road system in October, 1929, and makes a loop beyond the city streets of Bandon by the beach and scenic development and comes back to the Roosevelt Highway a short distance south of Bandon.

In April, 1930, a contract to grade from Sta. 0 at Bandon city limit to the highway at Sta. 207+30 was awarded to D. P. Plymale. The roadbed is 22 feet wide and the contract was completed August 15, 1930. Cost $12,475.31, of which amount $5,706.66 was market road, $5,000 general road and $1,768.65 district funds. In August, 1930, county forces placed a clay mat on the sand from Sta. 0 to Sta. 64 and from Sta. 121+80 to Sta. 153 and surfaced with Randall pit gravel 8 feet wide by 8 inches deep from Sta. 0 to Sta. 64. This carries the surfacing past most of the scenic points and past the golf course. It is expected that the entire road will be surfaced full width next year.

CROOK COUNTY

Since the Market Road act took effect in 1920, a total of $203,770.80 has been made available for market roads in Crook County, of which $90,286.28 was from the state market road appropriation, $99,391.95 from county market road levies and approximately $14,092.57 from cooperative funds such as bonds, motor license, general road fund, etc.

A total of $200,012.09 has been expended and the following work accomplished: 79.67 miles graded; 43.44 miles surfaced; and maintenance during the last six years cost $13,058.42.

During the past two years $23,818.67 has been expended and the following work accomplished: 17.53 miles graded and maintenance cost $4,025.11.

STATUS OF MARKET ROAD SYSTEM, AS OF OCTOBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement		
		Surfaced with Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Bear Creek-Held	14.13	4 26	2.04	7.83
2. Jap Creek	9.58	9.58	....	....
3. McKay Creek	4.00	1.00	3.00	....
4. Prineville-Williams-Madras	9.70	1.60	5.00	3.10
5. Mill Creek	2.00	....	....	2.00
6. Crooked River	49.39	27.00	19.26	3.13
7. Powell Butte	6.93	....	6.93	....
Total in miles	95.73	43.44	36.23	16.06

During the past two years, all of the work has been centered on the Prineville-Madras Market Road No. 4 and the Crooked River Market Road No. 6. The County Court is deserving of a great amount of credit for taking advantage of conditions and acquiring about 6 miles of right of way on a diagonal route to the county line on Market Road No. 4. The cost of this right of way was practically nothing and about two-thirds of it was through irrigated land. This road will be quite important when completed and connected with Jefferson County projects.

The resources of the county are comparatively small and the population small and scattered. The County Court has purchased in the last two years two tractor and blade outfits and revolving fresnoes. With location adapted to this type of equipment, costs have been reduced to a very low figure and very good roads built and within the means of the county and meeting all requirements. A very good example of this is on Crooked River Market Road No. 6 from the Stewart Grade to Paulina, a distance of 15.66 miles. Grading including all excavation and a bridge across Crooked River, will cost when completed about $850 per mile or $13,200 total. Roadbed 22 feet wide. A little solid rock and several cuts of intermediate material on steep slopes were encountered. This material was bladed across the road and moved at a cost of about 15 cents per cubic yard.

The work is all under direction of the County Court: M. R. Biggs, Judge; Carey W. Foster and Ben Groff, Commissioners. A. R. Schriver is County Engineer in active charge of the work. Mr. Schriver also serves as County Engineer of Jefferson County, dividing his time equally between the two counties.

Prineville-Williams-Madras Market Road No. 4

In 1929, county forces graded from Sta. 250 where the new location swings away from the railroad to Sta. 573+67.4 at the Jefferson county line. It is estimated that the work is about 50 per cent completed at this time. Cost in 1929, $7,997.63; cost in 1930, $188.20; total cost, $8,185.83.

Crooked River Market Road No. 5

The location survey was made in 1929 from Sta. 110 at the east end of Stewart Grade to Paulina at Sta. 961. A crossing of Crooked River was made at Sta. 750 instead of near Paulina. This will abandon about five miles of present road but will save about one and one-half miles in distance. County forces graded this section in 1930 and it is estimated that the job was 80 per cent complete on October 1. Cost in 1929, $1,063.45; in 1930, $9,677.29; total cost, $10,740.

CURRY COUNTY

Since the Market Road Act took effect in 1920, a total of $136,839.14 has been made available for market roads in Curry County, of which $62,845.07 was from the state market road appropriation, $64,388.81 from county market road levies and approximately $8,605.26 from cooperative funds such as district specials, motor license, O & C, general road fund, etc. Of this amount $135,754.90 has been expended and the following work accomplished: 19.75 miles graded; 15.91 miles surfaced and maintenance during the last six years cost $6,175.28.

During the last two years $20,319.15 has been spent and the following accomplished: 4.68 miles graded; 2.68 miles surfaced; and maintenance cost $2,506.38.

STATUS OF MARKET ROAD SYSTEM, AS OF OCTOBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement		
		Surfaced with Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Elk River	4.50	4.50	....	....
2. Oak Flat	4.00	....	....	4.00
3. Winchuck	3.65	2.04	....	1.61
4. Pistol River	4.00	....	....	4.00
5. Floras Creek	14.00	....	3.84	10.16
6. Sixes River	6.00	....	....	6.00
7. Chetco	7.80	5.40	....	2.40
8. Cedar Fork	13.00	....	....	13.00
9. Jerry Flat	4.25	1.42	....	2.83
10. Giesel Monument-Wedderburn	4.50	....	....	4.50
11. Cape Blanco	5.00	1.60	....	3.40
12. Bagnell Ferry-Alf Miller	0.95	0.95	....	....
Total in miles	71.65	15.91	3.84	51.90

During the last two years nearly all of the construction work has been on the Floras Creek and Chetco Market Roads. Progress is necessarily slow owing to the limited funds. As none of the roads carry a heavy traffic, low standards are used, on the heavier grading projects a 12-foot roadbed and a nine foot surface is used. Each commissioner acts as roadmaster in his district and looks after both construction and maintenance. Nearly all of the grading jobs have been contracted. It is probable that with the narrow roads as now built and the class of construction for the future, and the supply of bar run gravel on hand, that the purchase of a small power shovel would be a great economy as much of the work is not adapted to team work and hand work is too costly. The County Court is composed of C. H. Bailey, Judge; E. B. Sypher and C. F. Heiberger, Commissioners. Paul Van Scoy, Resident Engineer for the Oregon State Highway Department at Coquille, acted as County Engineer on a part time basis in 1929. In 1930, Chas. Fitzhugh was County Engineer.

Floras Creek Market Road No. 5

In 1929, $300 of general road funds was spent in cleaning out slides. In 1930, a grading contract was awarded to and completed by Dan Plymale from the end of the 1928 project, Sta. 95+87=0, to Sta. 105

excepting the Floras Creek crossing at Sta. 20. Roadbed 10 feet plus ditches, cost $6,954.15. A good deposit of shale about 2 inches maximum size was located at Sta. 23 and will provide cheap surfacing material for this road.

Sixes River Market Road No. 6

In 1930, $396.25 was used in widening.

Chetco Market Road No. 7

In 1928, a grading and surfacing contract was awarded to J. R. Hill from Sta. 0 at Jack's Bridge to Sta. 136. Paid to contractor in 1928, $6,362.52. The contract was extended about one mile to the Tamba place at Sta. 196. Paid to contractor in 1929, $2,841.23. Total for project $9,579.63. Of this amount $1,915.93 was paid as cooperation by the Forest Service. Roadbed 12 feet between ditches and a 9-foot surface of bar run gravel.

In 1929, county forces partly graded and surfaced the section from Jack's Creek west to the end of the 1927 section, Sta. 0 to Sta. 69. About half of the project was finished in 1929 at a cost of $3,840.54. In 1930 the rest of the grading was contracted and the surfacing was completed by county forces, cost $5,972.49. Total cost $9,813.03. Roadbed 12 feet between ditches and surface of bar run gravel 9 feet wide. There remains from the highway at Harbor, to the beginning of the improved section, a distance of 2.4 miles to be improved. This road is very narrow and crooked.

Cape Blanco Market Road No. 11

In 1929, county forces continued grading and surfacing west from the end of the 1928 improvement at Sta. 37, (Work done with county forces paid out of general road fund and cost not reported), to Sta. 69. Roadbed 16 feet, surfaced 10 feet, cost $1,200, general road fund. In 1930 grading and surfacing was extended from Sta. 69 to Sta. 85. Same standards used, cost $600, general road fund.

DESCHUTES COUNTY

Since the Market Road Act took effect in 1920, a total of $422,302.28 has been made available for market roads in Deschutes County, of which $172,931.69 was from the state market road appropriation, $134,379.96 from county market road levies and approximately $114,990.63 from cooperative funds such as bonds, motor license, general road fund, etc. Of this total $368,238.17 has been expended and the following work accomplished: 122.86 miles graded; 2.92 miles surfaced; 0.14 miles paved; maintenance during the last six years cost $23,290.45 and cooperation on state highway construction to the extent of $25,420.

During the last two years $26,265.66 has been spent and the following work was accomplished: 8.83 miles graded; maintenance costing $13,806.56.

As the program of market road construction was necessarily slow owing to the fact that the total market road fund of the county was only large enough to finance a few miles each year, Judge R. W. Sawyer suggested the plan of a $185,000 bond issue to be spent in completing the more important market roads of the system at once and using the market road fund for five years to pay off this debt. After selection of about 100 miles for this improvement, the County Court put up the plan to various organizations with the further explanation that the work could be done cheaper and better with proper organization and equipment. On May 20, 1926, this bond issue was voted on and passed. It was late in the season before the bonds could be sold and work started. A 60 caterpillar tractor was purchased and later a 12-foot blade and the work laid out as much as possible to be suitable for this equipment. A section of 40 feet between ditches, which provides a 24-foot roadbed was generally used. Teams and fresnoes drifted the material and borrowed to fill low places. Sections not suitable for this type were contracted to team outfits. Very fine results were obtained by these methods and many other counties are now using this plan or a modification and have greatly reduced their cost of doing work. An inspection of the cost and work accomplished on the individual projects shows very low cost per mile.

As the soil is sandy, these roads settle and become compacted and handle local travel without a surface. Places which show weakness are graveled.

This program continued until the latter part of 1927 and most of the bond roads were completed when a bank failure tied up the funds.

Maintenance is well organized and equipped and the organization handles both county and market road maintenance and considerable construction. The organization is efficient and the costs correspondingly low.

The work has been under direction of the County Court: H. H. DeArmond, Judge; J. S. Innes and E. M. Peck, Commissioners. R. B. Gould is County Engineer and Frank H. May is Roadmaster in charge of maintenance.

This program with the same type of roads and construction but a cheaper type has made a very good system of roads which well takes care of the entire county, and as these roads are always kept in first-class condition, trading centers are easily reached.

[DESCHUTES]

STATUS OF MARKET ROAD SYSTEM, AS OF OCTOBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement			
		Paved with Bituminous Pavement	Surfaced with Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Shevlin Park	2.92	....	2.92	....	....
2. Redmond, Northwest	5.95	....	....	5.95	....
3. Terrebonne-Lower Bridge	5.16	....	....	5.16	....
4. Redmond-Powell Butte	2.92	....	....	2.92	....
5. Butler	5.68	....	....	5.68	....
6. Arnold	2.84	....	....	2.84	....
7. Metolius River (Santiam Highway)	....	....	....	....	....
8. Lower Bridge	19.12	....	....	19.12	....
9. O'Niel	3.75	....	....	3.75	....
10. Alfalfa	10 42	....	....	10.42	....
11. Tumalo Reservoir	9.15	....	....	9.15	....
12. Smith Rock	3.95	....	....	3.95	....
13. Tetherow Bridge	4.00	....	....	....	4.00
14. Bend-Prineville	9.00	....	....	2.24	6.76
15. Nichols	4.33	....	....	4.33	....
16. Gerking	2.89	....	....	2.89	....
17. Camp Polk	2.00	....	....	....	2.00
18. Tumalo-Cline Falls	6.57	....	....	6.57	....
19. Swalley Bridge	1.70	....	....	....	1.70
20. White Rock	3.75	....	....	3.75	....
21. Couch	3.95	....	....	3.95	....
22. Bailey	0.80	....	....	....	0.80
23. Cline Buttes-Plainview	6.20	....	....	....	6.20
24. Innes	4.14	....	....	4.14	....
25. Peninsula	3.50	....	....	....	3.50
26. Almeter	1.50	....	....	....	1.50
27. Whitted	3.66	....	....	3.66	....
28. Forked Horn Butte	1.50	....	....	....	1.50
29. Sedgwick	2.20	....	....	....	2.20
30. Redmond-Tetherow Butte	2.20	....	....	....	2.20
31. Cornelius	1.50	....	....	....	1.50
32. Wester	0.50	....	....	....	0.50
33. Sturdevan	3.00	....	....	....	3.00
34. Deschutes-Pleasant Ridge	3.79	....	....	3.79	....
35. Bend-Deschutes	5.00	....	....	....	5.00
36. Pilot Butte Ranch	2.20	....	....	....	2.20
37. Reynolds	1.40	....	....	....	1.40
38. Johnston Ranch	4.04	....	....	4.04	....
39. Hamilton	3.00	....	....	....	3.00
40. Ward	4.50	....	....	....	4.50
41. Gasney	4.00	....	....	....	4.00
42. Fort Rock	6.50	....	....	....	6.50
43. Spring River	3.80	....	....	....	3.80
44. Little River	6.20	....	....	....	6.20
45. Reed	1.07	....	....	1.07	....
46. J. H. Scott	0.14	0.14	....	....	....
47. Century Drive	10.43	....	....	10.43	....
Total in miles	196.82	0.14	2.92	119.80	73.96

Deschutes-Pleasant Ridge Market Road No. 34

In 1929, county forces graded from Sta. 0 at Deschutes to Sta. 200+11, tractor and blade type of construction, 20-foot roadbed. Cost $6,329.69, bond fund.

Bend-Deschutes Market Road No. 35

In 1929, graded with county forces. Bond fund, $408.12.

Johnston Ranch Market Road No. 38

In 1929, county forces graded Sta. 0 at Alfalfa to Sta. 213+31 at the Crook County line to connect with the improved Market Road No.7 in that county. Roadbed 24 feet. Cost, $4,213.70, bond fund.

As the bonds are now falling due and funds are still tied up in a Bend bank failure, no funds have been available except for maintenance in 1930. Some funds are now on hand and a survey has been ordered made on the Fort Rock Market Road No. 42 to connect from the present road to the Horse Ridge section of the Central Oregon highway. The construction work will be light and alignment good. Construction of the road will permit the abandonment of several miles of road on rock ledges which cannot be kept in suitable condition for travel.

DOUGLAS COUNTY

Beginning with the year 1920 a total of $1,243,472.07 has been made available for market roads in Douglas County, of which $446,850.11 was from the state market road appropriation, $450,603.99 from county market road levies, and approximately $346,017.97 from county cooperative funds, such as bonds, special district levies, general road funds, motor license funds, O. & C. funds, etc. Of this amount $1,237,172.71 has been expended and the following work accomplished: 102.03 miles graded, 127.69 miles surfaced, 6.7 miles paved, 1.6 miles oiled, surfacing treatment, and major bridges costing $154,200; also maintenance during the last six years costing $89,319.51, cooperation on state highways to the amount of $60,355.87 and cooperation on forest highways to the amount of $125,009.

During the two years past, $240,997.17 has been spent and the following work accomplished: 17.73 miles graded, 27.03 miles surfaced, 1.6 miles oiled, surface treatment, and an average of 239.1 miles maintained.

Douglas County is one of the larger counties in the western part of the state and is of a mountainous nature with many small valleys and streams. The county has many miles of roads in the county system of which an appreciable portion is on the market road system, two large highway improvement districts have been formed in the county to expedite the completion of important highways and one large special road district. The highway improvement districts are known as the Drain-Reedsport and the North Umpqua; the special road district is known as the Tiller-Trail. These districts vote special levies and as the highways to be improved are also on the market road system, and also receive federal forest aid, they will probably be completed within a few years.

There are more than 1,000 bridges exceeding 10 feet in length on the county and market road systems, many of which are of considerable length. The bridge problem is, therefore, one of considerable magnitude, many of the bridges have been in use for years and must be replaced, no large structures were undertaken the past two years but one or two bridges were repainted and redecked. The new bridge over the Umpqua at Scottsburg on the Drain-Reedsport Highway, which is in the Drain-Reedsport Highway Improvement district was completed late in 1929 and the old Scottsburg ferry was retired from service.

Market road work has been performed by county forces and by contract. Some additions have been made to the market road system during the past two years. A road from the Pacific Highway up Cow Creek to Anchor and a road from Myrtle Creek on the Pacific Highway up North Myrtle Creek to Buck Fork and also a road from Myrtle Creek up the south fork of Myrtle Creek to Nugget have been placed on the market road system.

The engineering and supervision of construction has been handled by Floyd C. Frear, County Engineer and Roadmaster for many years, under the direction of Judge W. S. Hamilton and Commissioners Huron Clough and R. A. Busenbark. The engineering on the Tiller-Trail road has been handled to some extent by the Forest Service and on the Drain-Reedsport by state forces.

Maintenance work in the county is handled by district road supervisors, county equipment consisting of motor graders. Trucks and drags are shifted from one district to another and in general the market roads are well maintained.

STATUS OF MARKET ROAD SYSTEM AS OF NOVEMBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement					
		Paved with Bituminous Pavement	Paved with Concrete Pavement	Oiled, Heavy Oil	Surfaced with Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Canyonville-Trail	39.2	......	......	....	33.0	2.0	4.2
2. Drain-Reedsport	52.0	......	......	....	52.0	......	......
3. Loon Lake	19.5	......	......	....	11.0	......	8.5
4. North Umpqua	44.0	......	......	....	26.0	......	18.0
5. Roseburg-Reston	20.0	......	......	....	19.0	......	1.0
6. Edenbower-Millwood	19.1	......	1.8	1.6	15.7	......	......
7. Yoncalla-Elkhead	9.7	......	......	....	9.7	......	......
8. Scotts-Valley	9.0	......	......	....	8.0	......	1.0
9. Sutherlin-Umpqua	7.3	......	......	....	7.3	......	......
10. Oakland-Elkton	30.4	......	......	....	30.4	......	......
11. Beckley	9.6	......	......	....	4.6	......	5.0
12. Pacific Highway-Glendale	3.2	......	3.2	....	......	......	......
13. Roseburg-Melrose	7.4	0.4	1.3	....	5.7	......	......
14. Cow Creek	12.7	......	......	....	12.7	......	......
Total	283.1	0.4	6.3	1.6	235.1	2.0	37.7

Canyonville-Trail Market Road No. 1

Drew Section, 2.60 miles grading and small bridges, from Sta. 24 about five miles southeast of Tiller, east to Sta. 161. Roadbed width, 14 feet. Work by Rust Bros., contractors; begun July, 1928; completed August, 1929. Expended during 1928, $14,657.05. Total cost of the project, $37,294.48, as follows: Market road, $872.01; general funds, $4,657.05; special district tax, $1,806.58; O. & C. funds, $7,321.41; general road funds, $10,720; U. S. B. P. R., $11,917.43.

Days Creek Bridge at Sta. 385+25, one 35-foot A-frame and 75 feet of standard trestle with fill approaches. Work by county bridge forces, commenced October, 1929, completed June, 1930. Cost, $3,330.52, from market road funds.

Drew Section, 3.0 miles of surfacing, including removal of slides and preparation of subgrade. From Sta. 2, about five miles southeast of Tiller, east to Sta. 161, surfacing width 8 feet, depth 6 inches; work performed by Oscar Joelson, contractor; work commenced June, 1929; completed September, 1929. Total cost of the project, $4,851.01, from market road funds.

Crispen Section, 0.41 mile of grading and surfacing from Sta. 66+62 to Sta. 88+25, roadbed width 20 feet, surfacing 10 feet width, 4 inches depth. Work performed by county forces; commenced June, 1929, completed October, 1930. Cost, $2,457.96; market road funds, $1,134.21; district funds, $1,323.75.

Fate Grade Section, 0.32 mile of grading, from Sta. 178 to Sta. 195; roadbed width 20 feet; work performed by county forces; commenced in July, 1930. Cost to November 1, $473.60, from market road funds. Estimated total cost, $3,000.

Tison Section, 3.47 miles of grading and surfacing, Sta. 152+60 to 212+50 and Sta. 242+00 to Sta. 336+00, roadbed width 16 feet in cuts, 14 feet on fills, surfacing 9 feet width and 5 inches depth. Work performed by county forces; commenced September, 1930. Cost to November 1, $12,979.90; from market road funds, $12,694.90; from general funds, $285.

A special road district has been formed to provide funds to continue construction on this market road and present plans contemplate that there will be available in 1931, a sum approximating $35,000.

Drain-Reedsport Market Road No. 2

Scottsburg bridge, steel spans and concrete approaches. Work by Clackamas Construction Co., contractor. Work commenced June, 1928; completed November, 1929. Total cost, $114,936.52. Paid by county to November 1, 1930, from market road funds, $18,633.71; from general funds, $4,778. Final payments from county funds not yet completed. Design and inspection by Oregon State Highway Department.

Grading approaches to Scottsburg bridge. Work begun in July, 1929; completed November, 1929. Total cost, $20,453.42; paid by county from market road funds, $552.35; general road fund, $2,543.56, and from general county funds, $5,103. Final payments from county funds not yet completed.

Drain-Redbridge and Scottsburg-Burchard Creek Section, grading 14.53 miles, Drain-Redbridge section Sta. 1269+48 to Sta. 1806+00. Scottsburg-Burchard Creek Section, Sta. 45+00 to Sta. 285+00. Peck & Emerson, contractors on the Drain-Redbridge section; work commenced August, 1929; completed October, 1930. Harmon & Tittle, contractors on the Scottsburg-Weatherly Creek section; work commenced April, 1930; to be completed in 1931. Total estimated cost, $332,711. Paid to November 1, 1930, from market road funds, $16,957.15; from general funds, $2,059; from general road funds, $29,919; from the sums of money paid by the county $18,894.15 was for right of way.

The Umpqua Highway Improvement District was formed in order that special funds might be voted to expedite construction of this road, and the funds so obtained, together with federal aid and money from market road funds and other county sources, are rapidly completing the grading, surfacing and bridges on this road.

Loon Lake Market Road No. 3

Umpqua River to Loon Lake 8.9 miles gravel surfacing, Sta. 66+00 to Sta. 604+00. Surfacing width 8 feet, depth 6 inches. Umpqua Dredging & Construction Co., contractors; work begun July, 1929; completed October, 1929. Total cost, $10,800.50; market road funds, $4,548.41; O. & C. tax funds, $1,798.25; district tax funds, $4,453.84.

The construction of this surfacing permitted cars to travel to and from Loon Lake Valley throughout the entire winter for the first time.

Boak Section, 1.9 miles grading, Sta. 1+00 at Craig's ranch to Sta. 63+00 at Boak's ranch. Roadbed width, 16 feet. Work by Liesch & Tofte contractors; begun July, 1930. Total cost to November 1, 1930, $7,248.22; market road funds, $3,795.55; district funds, $3,452.67. This road district plans to vote another district tax for further grading and surfacing in 1931.

North Umpqua Market Road No. 4

Oak Creek Bridge at Sta. 78+50 or Mile Post 10.8, 54 lineal feet of trestle bridge, width 19 feet. Constructed by county forces; work begun May, 1929; completed September, 1929. Total cost all from market road funds, $974.21.

Idlyld Section, 0.1 mile grading and surfacing from Sta. 1234+50 to 1239+00, about 22 miles east of Roseburg. Roadbed width, 20 feet, surfacing width, 16 feet, depth, 4 inches, surfacing material gravel. Work by A. J. Jacques, contractor. Work begun June, 1929; completed September, 1929. Total cost, $3,867.05; O. & C. tax funds, $2,664.82; special district tax, $1,202.23.

Rock Creek Section, 0.28 mile of grading and gravel surfacing, Sta. 1250+00 to Sta. 1265+00; roadbed width, 20 feet; surfacing, 16 feet wide, 6 inches in depth. Work by county forces; work begun April, 1930; completed September, 1930. Total cost, $584.80, all from district funds.

Reston Loop Market Road No. 5

Williams Bridge at Mile Post 10.5 from Roseburg; 24 lineal feet of standard pile trestle. Constructed by county forces; work begun May, 1929; completed June, 1929. Total cost, $389.04, from market road funds.

Mathews Bridge at Mile Post 12.1 from Roseburg; 18 lineal feet of timber bridge on concrete. Constructed by county forces; work begun May, 1929; completed June, 1929. Total cost, $775.93, from market road funds.

Gurney Section, 0.44 mile of grading and gravel surfacing, from Sta. 856+00. Bushnell Section to Sta. 23+00. Gurney Section, roadbed width, 20 feet; surfacing width, 16 feet; depth, 4 inches to 6 inches. Work by county forces; begun June, 1929; completed October, 1929. Total cost, $2,596.65; market road funds, $1,601.65; district funds, $995.

Bushnell Bridge No. 1 at Mile Post 17.2 from Roseburg; 107 lineal feet of standard pile trestle. Constructed by county forces; work begun May, 1930; completed June, 1930. Total cost, $858.74, from market road funds.

Bushnell Bridge No. 2, at Mile Post 17.7 from Roseburg; one 37-foot truss with 80 feet of trestle approach, on concrete abutments. Constructed by county forces; work begun June, 1930; completed July, 1930. Total cost, $1,852.65, from market road funds.

Bushnell Section, 0.65 mile of grading and surfacing, Sta. 856+50 to Sta. 866+00 and Sta. 889+00 to Sta. 914+00. Grading width, 20 feet; surfacing width, 9 feet; depth, 6 inches. Work by county forces; work begun June, 1930; completed September, 1930. Total cost. $2,955.67; market road funds, $2,311.41; district tax funds, $644.26. The bridges constructed on this market road during the past two years replaced some old structures which had become unsafe, and with the section graded was a much needed improvement. This road district expects to vote another tax for 1931 so that additional grading can be carried on.

Edenbower Market Road No. 6

Brown's Bridge Section, 3.2 miles resurface preparation for oil, Sta. 92+25 (end of concrete pavement 1.75 miles west of Pacific highway) to Sta. 258+50 at Brown's Bridge over Umpqua River. This work was by county forces and was completed in 1928, costing $3,089.13. In August, 1929, a section 1.7 miles in length from Sta. 92+25 at west end of concrete pavement to Sta. 182+00 was oiled with 95 per cent oil by State Highway Department forces. The total cost of the work performed in 1929 was $3,291.16, of which sum $2,190.90 was for road oiling. The total cost of the resurfacing and oiling project was $6,380.29; market road funds, $3,748.40; district tax, $2,631.89.

This oiled section has been so satisfactory and has required so little patching that the district now expects to vote a special tax for 1931 to continue the oil for an additional two miles.

Yoncalla-Elkhead-Milton Market Road No. 7

Applegate Bridge at Sta. 187+22 to Sta. 188+27, approximately 4.5 miles east of Yoncalla; one truss 37 feet in length with 105 lineal feet of trestle approach, 18 feet width; constructed by county forces; work begun August, 1930; completed September, 1930. Total cost, $1,828.84, all from market road funds.

Scotts Valley Market Road No. 8

School House Hill Section, 0.24 mile of grading and surfacing with cinobar cinders, Sta. 126+30 at Shoestring Schoolhouse northerly to Sta. 139+25. Roadbed 20 feet in width; surfacing width, 10 feet; depth, 6 inches. Work by county forces; begun September, 1929; completed October, 1929. Total cost, $943.03, all district tax.

Kletzer section, 0.75 mile of grading and surfacing, Sta. 139+25, approximately one-quarter mile north of the Shoestring Schoolhouse, northerly to Sta. 179+00. Roadbed width, 20 feet; surfacing width, 9 feet; depth, 6 inches with cinobar cinders. Work by county forces; begun in July, 1930; completed in September, 1930. Total cost, $2,002.72; market road funds, $1,625.74; district tax funds, $378.98. There remains on this market road from the foot of London Hill to Elkhead approximately 1¼ miles to be graded and surfaced, and on the south slope of London Hill approximately one-half mile remains to be graded and surfaced; in Lane County the connecting road has been graded and when surfaced there will be a good road from Yoncalla to Cottage Grove via London Springs.

Oakland-Elkton Market Road No. 10

Smith Ferry Bridge section, 0.29 mile of grading, etc., Sta. 140+00 to Sta. 155+00 and 4.64 miles of surfacing, Sta. 140+00 to Sta. 181+00 less 716 feet of bridge over the Umpqua River. Roadbed width, 20 feet; surfacing, 10 feet wide and 5 inches in depth. Work by county forces; begun in July, 1928; completed in July, 1929. Total cost, $3,593.62; market road funds, $2,266.11; general fund, $625; O. & C., $702.51. This section covered the grading and surfacing of the approaches to the Smith Ferry Bridge.

Smith Ferry Bridge, Sta. 159+65 to Sta. 166+81; steel span 450 feet; timber approaches 226 feet. Clyde Catching, contractor; work commenced April 23, 1928; completed July, 1929. Total cost, $49,830.49, market road fund. Cost in 1929, $26,046.94, market road funds. This bridge replaced an old ferry which has been in use for years; also steep grades to the ferry. During high or flood waters the ferry could not be operated.

Kellogg Bridge, at Mile Post 20.5 near Kellogg, replacing timber approaches, redecking and painting steel span. Work by county forces; begun July, 1929; completed September, 1929. Total cost, $4,456.02, market road funds. The timber approaches and decking were in bad condition and the work just completed will give added strength and longer life to the structure.

Deep Gulch Bridge and grading approaches; 105 lineal feet of trestle and 125 feet of fill, Sta. 850+20 to Sta. 852+50; roadbed and bridge 20 feet in width. Work by county forces; work begun March, 1929; completed August, 1929. Total cost, $2,314.36; market road fund, $1,614.36; district funds, $700.

Deep Gulch section, 1.44 miles grading and base course surfacing, Sta. 834+00 to Sta. 911+00; roadbed width, 20 feet; surfacing width, 10 feet; depth, 5 inches, crushed gravel. Work by county forces; begun June, 1929; completed October, 1929. Total cost, $9,788.94; market road funds, $2,903.89; district tax, $5,000; O. & C. funds, $1,885.05.

Cobb-Hutchinson section, 1.72 miles of grading and gravel surfacing, Sta. 821 to Sta. 878 and Sta. 940 to Sta. 962. Roadbed width, 20 feet; surfacing width, 10 feet; depth, 6 inches. Earl L. McNutt, contractor; begun April, 1930; completed July, 1930. Total cost, $14,787.33; market road funds, $13,909.52; district funds, $877.81.

The bridges constructed and the sections graded have made some very good improvements on this market road during the past two years, and with additional work projected for the next two years, nearly all of the narrow grade along the Umpqua River will have been eliminated.

Glendale Market Road No. 12

Windy Creek Bridge to Glendale Bridge over Cow Creek, 0.1 mile concrete pavement. This section was completed in 1928 (see page 505 of the 1927-28 Biennial Report). This job has been opened again to report an additional charge of $27.59 from district funds.

Melrose Market Road No. 13

Seventy one-hundredths mile grade and concrete pavement from Sta. 52 end of 1926 paving job, 1½ miles west of Roseburg, west to Sta. 89. This section was completed in 1928 (see page 505 of the 1927-28 Biennial Report). This job has been opened again to report an additional charge of $26.86, market road funds.

Slaughter House section, 1.25 miles of grading and screened gravel surfacing, beginning approximately 2½ miles west of Roseburg at Sta. 140 and extending west to Sta. 206. Roadbed width, 24 feet; surfacing width, 18 feet; depth, 6 inches. Work by county forces; begun June, 1929; completed September, 1929. Total cost, $7,244.57; market road funds, $3,146.97; general fund, $60; district tax, $4,037.60.

Busenbark section, 1.32 miles grading and surfacing, beginning approximately 2.25 miles west of Roseburg and extending west; Sta. 123 to Sta. 139 and Sta. 208 to Sta. 275. Roadbed width, 24 feet; surfacing width, 18 feet; depth, 6 inches. Grading work, Sta. 123 to Sta. 139, and surfacing of entire project by county forces; grading Sta. 208 to Sta. 275 by Fred H. Slate, contractor. Work begun April, 1930; completed September, 1930. Total cost, $9,099.14; market road funds, $7,122.44; general fund, $100; district fund, $1,876.70.

The section graded and surfaced this biennium removed some very crooked alignment from this road. Present plans contemplate an extension of the grading and surfacing in 1931 and 1932.

Anchor Market Road No. 14

Springer section, 0.55 mile of grading and surfacing, Sta. 605+00 approximately 11.5 miles east of the Pacific Highway, east to Sta. 634+20. Roadbed width, 20 feet; surfacing width, 9 feet; depth, 6 inches, screened gravel. Work by Hall & Jacques, contractors; begun June, 1930; to be completed, 1931. Estimated cost, $3,596. Total cost to November 1, 1930, $2,868.31; market road funds, $2,622.22; district funds, $246.09.

This market road was placed on the market road system in 1929. Another section probably will be graded and graveled in 1931.

GILLIAM COUNTY

Beginning with 1920, a total of $378,337.27 has been made available for market roads in Gilliam County, of which $158,603.03 was from the state market road appropriation, and approximately $161,039.61 from county market road levies, and approximately $58,694.63 from county cooperative funds such as bonds, special district levies, general road fund, etc. Of this amount $355,500.84 has been expended and the following work accomplished: 45.95 miles graded; 40.24 miles surfaced; major bridge costing $7,368, and maintenance during last six years costing $24,007.80.

During the past two years $81,771.91 has been spent and the following accomplished: 14.15 miles graded; 14.14 miles surfaced and maintenance costing $21,465.15.

STATUS OF MARKET ROAD SYSTEM, AS OF NOVEMBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement		
		Surfaced with Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Wehrli Canyon	8.00	3.40	....	4.60
2. Cayuse	15.00	....	0.10	14.90
3. Lone Rock	22.00	9.60	....	12.40
4. Cottonwood	26.00	11.84	5.61	8.55
5. Ramsey Canyon	9.00	1.80	....	7.20
6. Shutler	9.00	0.20	....	8.80
7. Blalock Canyon	14.00	3.50	....	7.50
8. Thirty Mile Canyon	2.40	2.40	....	....
9. Mikkalo	22.00	2.20	....	19.80
10. Clem	1.20	1.20	....	....
11. Quinton-Blalock Canyon	8.00	0.40	....	7.60
12. Ferry Canyon	16.00	3.70	....	12.30
13. Condon-Heppner	10.00	....	....	10.00
14. Olex	10.00	....	....	10.00
15. Base Line	12.00	....	....	15.00
Total miles	184.60	40.24	5.71	138.65

Previous to 1928, owing to condition of the county's finances practically no road work was done in the county except on market roads. No county road organization existed and no equipment was on hand, so all market road projects were contracted, generally to contractors working on state projects. In 1928, the county court purchased a heavy grader and tractor outfit and later purchased other equipment. Many miles of county roads have been put in good condition and market roads have been constructed by county forces. The grading has been very cheaply done. In 1930, owing to poor crops and other economic conditions, no work was undertaken except necessary maintenance.

In 1929, a very thorough reconnaissance was made of the county and possible road routes between Condon and Heppner and the route down Six Mile Creek decided upon as the lowest in cost, best serving the entire area and construction can be done in several units, each being available for travel as completed. Surveys were made in 1929 in expectation of 1930 construction but finances were not available.

The road construction and maintenance are well and cheaply done by well-organized and well-equipped crews in charge of Doc Rice, County Foreman. J. R. Mitchell, Resident Engineer, State Highway Department, is acting as County Engineer, on a part time basis, in addition to his other duties. All road work is under direction of the County Court: James R. Burns, Judge, and J. M. Hoag and Lloyd E. Smith, Commissioners.

Wehrli Canyon Market Road No. 1, Sta. 218+56 at junction with John Day Highway to Sta. 126+06 graded and surfaced in 1921. Contract for resurfacing the above section and grading and surfacing Sta. 126+06=0+00 to Sta. 85+60 awarded to Carl LaCont in April, 1928. Roadbed section, 16 feet, Class "C" and surfacing 12 feet by 8 inches deep crusher run, 1-inch minus crushed rock base and top. Resurface 12 feet wide by 4 inches deep. Contract completed April, 1929. Total cost, $20,147. Sta. 85+60 is out of Wehrli Canyon on flat country. Beyond this point the road has been graded to fair standard with tractor and blade outfit, using district funds. It is probable that surfacing will not be extended beyond this point.

Condon-Lone Rock Market Road No. 3, Sta. 21+30 on John Day Highway in Condon to Sta. 0+00 at city limit to Sta. 179+79 graded and surfaced as a bond project in 1922. Resurfaced in 1927, 16 feet wide by 4 inches deep, at a cost of $9,952.24. Matney Flat section, Sta. 179+79 to Sta. 391+06, was graded in 1928 and 1929 by county forces at a cost of $7,527.63, $181.22 being paid out of the market road fund and $7,346.41 from the general road fund. In 1929, the Matney Flat extension, Sta, 391+06 to Sta. 485+62, was graded by county forces at a cost of $3,349.62; market road fund, $2,090.02; general road fund, $391.33. This entire section was surfaced in 1929, 14 feet wide by 8 inches on the first mile and the rest 12 feet wide. Crushed rock base and top 1 inch minus. Cost of surfacing, $12,800.94; $12,323.61 from market road funds and $477.33 from general road fund. The equipment for this job was owned by the county and no charge made for rental or depreciation. An entire new alignment was selected on this road and much cheaper grading as well as better alignment obtained and a five-mile section of road reduced to four miles.

The improved section is at the top of the grade into Thirty Mile Creek. County forces with tractor and blade equipment have, as a maintenance project, widened and greatly improved the road from here to Lone Rock.

Condon-Cottonwood Market Road No. 4, Sta. 0+00 at north end of Main street, Condon (13+83.6 city limit), west to Sta. 330+67.2, graded and surfaced as a bond project in 1922 and 1923. Surfaced Sta. 0-31+32 east and resurfaced west to Sta. 319 in 1927, 16 feet wide by 4 inches deep. County forces graded in 1928 and 1929 from Sta. 319 to Sta. 890+00, 24-foot roadbed, at a cost of $25,664.27, $6,533.13 of market road funds and $4,271.19 general road fund spent in 1928 and $12,488.01 market road funds and $2,371.94 of general road funds expended in 1929.

In 1929, county forces surfaced from Sta. 319 to Sta. 594 with crushed rock 12 feet wide by 8 inches deep. Total cost, $15,181.03.

Ramsey Canyon Market Road No. 5, Sta. 0+00 at junction with John Day Highway to bench lands at east end of the canyon at Sta. 95, graded in 1922 and 1923. Surfaced 12 feet wide by 8 inches deep in 1928 and 1929 by Carl LaCont, contractor. Total cost, $4,276.39, market road fund.

Condon-Heppner Market Road No. 13, Sta. 0+00 on the Condon-Lone Rock Road to Sta. 527+17 at the Morrow County line, survey made in 1929. Cost, $1,623.88.

GRANT COUNTY

Beginning with the year 1920, a total of $316,405.57 has been made available for market roads in Grant County, of which $120,030.19 was from the state market road appropriation, $152,119.85 from county market road levies, and approximately $44,255.53 from county cooperative funds, such as bonds, special district levies, general road funds, motor license funds, etc. Of this amount $309,774.96 has been expended and the following work accomplished: 44.86 miles graded, 19.50 miles surfaced, 1.5 miles resurfaced as betterment work, and maintenance during the last six years costing $7,819.00, also cooperation on State Highways to the amount of $49,460.

During the two years just past $62,531.35 has been spent and the following accomplished: 7.99 miles graded; 17.56 miles surfaced; and an average of 56.4 miles maintained.

During the past two years considerable progress has been made toward completing road projects of importance to Grant County. On Market Road No. 1 from Long Creek to Kimberly via Hamilton 12.3 miles were graded and surfaced; this leaves a gap of approximately eight miles on this market road to be graded and surfaced and present plans contemplate that this section will be graded and surfaced during the next two years. On this market road a problem confronts the County in rebuilding a bridge over the North Fork of the John Day River at Monument, the existing structure cannot long remain in use. On Market Road No. 2 which is also the Pendleton-John Day State Highway, a section of 5 miles from Mt. Vernon to Beggs Ranch on Beech Creek was graded and surfaced as a Market Road project and from the northerly end of this section to Beech Creek was graded and surfaced as a state project. This road is now graded and surfaced from Mt. Vernon to Long Creek, with the prospect that some work can be done north of Long Creek during the next two years. On Market Road No. 3, between Canyon City and Burns which is also a Forest Highway, a section between Silvies and Seneca around Soda Mountain is being graded in 1930 and with other work of grading and surfacing which has been done the past two years south of Canyon City and from Silvies north will practically complete this road to a fair standard.

Engineering work has been handled by L. E. Lucas, County Engineer, by State Highway Department Engineers and by Engineers from the Bureau of Public Roads. The County Court consisted of Judge Orin L. Patterson, resigned, and succeeded by R. A. Petrum, appointed by Governor I. L. Patterson, and Commissioners Geo. Yokum and R. W. Shaw.

[GRANT]

STATUS OF MARKET ROAD SYSTEM, AS OF NOVEMBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement		
		Surfaced with Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Kimberly-Monument-Long Creek	35.20	17.30	7.65	10.25
2. Mt. Vernon-Beech Creek-County line	28.20	5.26	3.94	19.00
3. John Day-Harney County line	36.00	27.00	7.00	2.00
Totals	99.40	49.56	18.59	31.25

Kimberly-Monument-Long Creek Market Road No. 1

Round Basin-Hamilton Section 4.75 miles of grading; Sta. 381 top of hill east of Round Basin to top of the mountain approximately one-half mile west of Hamilton at Sta. 632+38. Roadbed width 16 feet. Work by W. L. Slutz, contractor, begun July 1, 1929; completed November 14, 1929. Total cost, $12,918.78, all market road funds.

Long Creek-Hamilton section surfacing with crushed rock 12.3 miles; from Sta. 0 at Long Creek to Sta. 633 one-half mile west of Hamilton at top of mountain, surfacing width 9 feet, depth 9 inches. Work by March Construction Company. Begun June 1, 1930; completed September 15, 1930. Total cost, $29,561.20; market road funds, $10,000; general funds, $19,561.20.

Mt. Vernon-Beach Creek-County Line Market Road No. 2

Warm Springs Creek-Beggs Ranch section, 2.90 miles grading, Sta. 78+50 to Sta. 260. Roadbed width 16 feet. Work by W. L. Slutz, contractor; begun May 15, 1929; completed January, 1930. Total cost, $12,317.50; from market road funds, $12,123.18; general funds, $194.32.

Beggs Ranch Section 0.34 miles of grade, Sta. 260 end of Warm Springs-Beggs Ranch section to Sta. 278 at south end of Beech Creek section constructed under direction of State Highway Department. Roadbed width 16 feet. Work by Shaw and Green, contractors. Begun November 15, 1929; completed January 15, 1930. Total cost, $2,031.76.

Mt. Vernon-Beggs Ranch section, 5.26 miles of rock talus surfacing, Sta. 0 in Mt. Vernon at John Day Highway to Sta. 278 at south end of Beech Creek section, constructed under direction of State Highway Department. Surfacing width, 12 feet; depth, 9 inches. Work by March Construction Company. Begun June 1, 1930; completed July 1, 1930. Total cost, $7,527.67; market road funds.

HARNEY COUNTY

Beginning with the year 1920, a total of $427,428.43 has been made available for market roads in Harney County, of which $148,697.95 was from the state market road appropriation, $139,817.33 from county market road levies and approximately $139,913.15 from county cooperative funds, such as bonds, special district levies, general road funds, motor license funds, etc. Of this amount $422,285.15 has been expended and the following work accomplished: 84.58 miles graded, 24.25 miles surfaced and maintenance during the last six years costing $12,056.01. Cooperation on state highways to the amount of $25,632.10 and cooperation on forest or federal aid highways for the amount of $58,687.68.

During the two years just past $76,542.65 has been spent and the following accomplished: 22.4 miles graded; 2.75 miles surfaced, and an average of 90.2 miles maintained.

Harney County is the largest county in Oregon and also the United States and many square miles are very sparsely settled for the most part consisting of large cattle or sheep ranches. Distances between settlements are great and in order to reach them many miles of road are required. During the past two years the market road system of the county has been extended: Market Road No. 1 from Folly Farm near the east boundary of the county southerly via Alvord, Andrews, Fields to Denio at the Nevada State line. Market Road No. 2 was extended from Narrows between Harney and Malheur Lakes to French Glen on the Donner and Blitzen River. And a new market road was placed on the system extending southerly from Princeton to Barton Lake and Diamond and Happy Valleys.

Standards for most of the market roads need not be very high and good grades can be secured with machinery at a reasonable cost. In many places a natural surfacing material exists and in others cinders can be secured which are satisfactory for light traffic.

The engineering work during the past two years has been handled by the Bureau of Public Roads, State Highway Department and County Engineer J. J. Walsh. The County Court consisted of Judge R. J. Williams and County Commissioners Bailey Hayes and J. W. James.

STATUS OF MARKET ROAD SYSTEM, AS OF NOVEMBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement		
		Surfaced with Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Crane-Denio	132.5	12.0	17.0	103.5
2. Burns-French Glen	61.0	9.5	8.5	43.0
3. Burns-Canyon City	31.0	24.6	....	6.4
4. Burns-Drewsey-Juntura	66.0	....	24.7	41.3
5. Diamond	46.0	3.2	12.5	30.3
Totals	336.5	49.3	62.7	224.5

Crane-Denio Market Road No. 1

Cheek Lane section in Virginia Valley, 0.9 mile grade, width 20 feet. Work by county forces; work begun July, 1929; completed September, 1929. Total cost, $961.96, market road funds. This section eliminated a very bad piece of road across low ground.

Summit Springs section, 0.5 mile approximately widening grade and providing better drainage. Work by county forces; begun in July, 1929; completed September, 1929. Total cost, $387.45, market road funds.

Fields-Andrews section, 1.5 miles grade 18 feet wide, near Fields. Work by county forces; begun in May, 1930; expended to November 1, 1930, $587.94, from market road funds. This section is to be completed in 1931. Estimated cost, $1,500.

Burns-French Glen Market Road No. 2

Wrights Point-Berry Corner section, 7.0 miles approximately grading with tractor and blade. Width, 20 feet. Work by county forces; begun in fall of 1928; completed September, 1929. Total cost, $1,900.49, from market road funds.

Burns-Canyon City Market Road No. 3

This is a forest highway and during the past two years $1,973.68 has been spent for right of way.

Burns-Drewsey-Juntura Market Road No. 4

Repairs to bridge at Drewsey over the Middle Fork of the Malheur River. Work by county forces, consisted of erecting bents under old structure, replacing deck and handrail. Work begun November, 1929; completed November, 1929. Cost, $172.05, from market road funds.

Vanderveer-Nigger Flat section, grading 7.74 miles. Roadbed width, 20 feet. Work by Jetly Bros., contractors. Begun October, 1927; completed September 20, 1929. Total cost, $44,242.75; market road funds, $29,490.99, expended in 1929 and 1930.

Harney County also cooperated 50 per cent on the Nigger Flat-Buchanan section of the Central Oregon highway, 3.43 miles of grade. Total cost, $47,658.49. County's share, $21,901.86, from bond funds. The State Highway Department engineers directed the work.

Diamond Market Road No. 5

Princeton-Riddle Creek section, 12.5 miles grading, with tractor and grader; 20 feet wide. Work by county forces; begun October, 1929; not completed to November 1, 1930. Estimated cost, $13,101.35; expended to November 1, 1930, $10,130.72, all market road funds.

New Diamond Lane section, 2.75 miles of surfacing with cinders. Roadbed width, 20 feet; surfacing 11 feet wide; 6 to 9 inches in depth. Work by J. J. Fuller, contractor. Begun February, 1930; completed June, 1930. Total cost, $7,880.65, from market road funds.

These two sections eliminated some very bad road and the people living in Diamond Valley will soon have an all-year road to Crane and Burns.

HOOD RIVER COUNTY

Since the Market Road Act took effect in 1920, a total of $326,038.77 has been made available for market roads in Hood River county, of which $155,149.61 was from the state market road appropriation; $168,163.66 from county market road levies, and approximately $2,725.50 from cooperative funds such as district, motor license, general road funds, etc. A total of $341,968.32 has been expended and the following work accomplished: 32.27 miles graded; 28.07 miles surfaced; 4.20 miles paved and maintenance during the past six years cost $12,353.05.

During the last two years $61,384.69 has been spent and the following work accomplished: 5.23 miles graded; 5.23 miles surfaced; 0.61 mile of asphalt penetration macadam and maintenance cost $3,695.60.

The market road system is well along toward completion as far as the present designation goes and it has made a wonderful system of roads for the county. It is expected that the Tucker Bridge on Market Road No. 8 will be replaced next year and probably oil surface or oil mix treatment started on these roads. The construction work has consisted of well-selected projects and the work has been done to good standards and at a reasonable cost. Roads are all well taken care of. The work has all been under the direction of the County Court: Jas. H. Jeffrey, Judge; Frank Keating and Allison Fletcher, Commissioners. C. M. Hurlburt is County Engineer on a part time basis.

STATUS OF MARKET ROAD SYSTEM, AS OF OCTOBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement				
		Paved with Concrete	Asphalt Penetration Macadam	Surfaced with Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Odell	1.80	0.90	....	0.90	....	....
2. Pomona	2.70	0.70	....	2.00	....	....
3. West Side	6.00	2.60	....	3.40	....	....
4. Dee	8.50	....	....	7.00	....	1.50
5. Parkdale	8.96	....	.61	6.46	....	1.89
6. Belmont	3.00	....	....	3.00	....	....
7. Interstate Bridge	0.50	....	....	0.50	....	....
8. River	3.50	....	....	2.70	....	0.80
9. Tucker Grade	1.50	....	....	1.50	....	....
Total in miles	36.46	4.20	.61	27.46	....	4.19

Parkdale Market Road No. 5

In 1929, the Walton Section was graded by Austin Risjord, contractor, from Sta. 240 to Sta. 261 and from Sta. 304 to Sta. 305, 24-foot roadbed. Cost, $5,131.11. County forces surfaced the above section, 16 feet wide by 8 inches deep. Cost, $1,650.79. County forces widened grade and surfaced from Parkdale, Sta. 335 to Jap Corner, south of Parkdale, Sta. 388, 24-foot grade; surfaced 16 feet wide. Cost, $5,127.74. County forces widened the grade and put on a heavy rock base and a bitumuls penetration macadam in two lifts making a total thickness of 4½ inches. This project extended from Parkdale, Sta. 0 to the Mt. Hood Loop Highway at Sta. 32. Cost, $9,947.94.

In 1930, a contract to grade, 24 feet wide, was awarded to Johnson and Rosten, Sta. 13+30 (0+00 at junction with Market Road No. 4 near Dee) to Sta. 140. County forces surfaced this section 16 feet wide at a cost of $4,543.24. Total cost to grade and surface, $25,901.35.

River Road Market Road No. 8

From April to June, 1929, county forces graded a roadbed 24 feet wide and surfaced 16 feet wide from Sta. 56+85 to Sta. 84. Cost, $4,425.83.

In June, 1930, a contract was awarded to Lee Slutz to grade from Sta. 0 at Tucker's Bridge to the top of Davidson Hill at Sta. 35+50. County forces surfaced the project. Roadbed 24 feet wide; surfacing 16 feet wide by 8 inches deep. Total cost, $5,068.04, of which $1,255.70 was the cost of surfacing.

JACKSON COUNTY

Beginning with the year 1920 a total of $1,007,149.44 has been made available for market roads in Jackson County, of which $448,872.77 was from the state market road appropriation, $474,588.87 from county market road levies, and approximately $83,687.80 from county cooperative funds, such as bonds, special district levies, general road funds, motor license funds, O and C funds, etc. Of this amount $985,239.80 has been expended and the following work accomplished, 81.69 miles graded, 79.58 miles surfaced, 8.40 miles paved, 11.93 miles oiled surface treatment, 9.55 miles resurfaced; also maintenance during the last six years costing $27,613.31.

During the two years just past $220,617.24 has been expended and the following accomplished: 17.60 miles graded, 16.09 miles surfaced, 11.93 miles oiled surface treatment; 9.55 miles resurfaced and an average of 91.1 miles maintained.

Jackson County has continued their market road work during the past two years and have accomplished excellent results. The county has embarked on an oiling program, and has established the first county-owned central heating and storage plant in the state, road oiling equipment has been purchased and several miles were oiled during 1930. One new market road was added to the county market road system during the biennium.

All construction and maintenance is performed by county forces under the efficient direction of County Engineer and Roadmaster Paul B. Rynning, who receives his instructions relative to policy and work to be performed from the County Court, consisting of County Judge Alex Sparrow and County Commissioners Victor Bursell and George Alford.

STATUS OF MARKET ROAD SYSTEM, AS OF NOVEMBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement				
		Paved with Bituminous Pavement	Heavy Oil Surface Treatment	Surfaced with Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Big Applegate	24.31	8.45	4.05	11.81	....	....
2. Sams Valley	15.77	....	....	11.00	....	4.77
3. Table Rock	11.59	....	6.16	5.43	....	....
4. Butte Falls	16.00	....	....	16.00	....	....
5. Little Butte Creek	30.60	....	....	12.23	....	18.37
6. Dead Indian	26.80	....	....	8.52	4.18	14.10
7. Central Point	3.24	....	1.72	1.52	....	....
Totals	128.31	8.45	11.93	66.51	4.18	37.24

Big Applegate Market Road No. 1

Medford-Ruch section, 8.0 miles; reconstructing pavement shoulders between Medford and Jacksonville approximately 4.00 miles; widening and strengthening shoulders and placing additional surface gravel between Jacksonville and Ruch and placing 95 per cent oil surface treatment 4.05 miles. Work by County forces; begun May, 1930; not completed November 1, 1930. Expended to November 1, 1930; $6,997.59; market road funds.

Table Rock Market Road No. 3

Four Corners to Pacific Highway section, 2.54 miles of grading, gravel surfacing and one 90 foot steel span with 154 feet of pile trestle Sta. 0 to Sta. 134+14.6. Roadbed width 26 feet; surfacing 20 feet wide and 8 inches depth. Width of bridges 20 feet. Construction of steel span over Bear Creek by Oscar Joelson, contractor, grading and surfacing by county forces. Work begun June 1, 1929; completed November 3, 1929. Total cost, $37,000.44; market road funds, $7,865.39; general fund, $25,273.60; district funds, $3,861.45.

Four Corners and Agate section, also overflow channel at Bear Creek bridge; 1.5 miles approximately resurfacing and channel change. Work by county forces; begun July, 1929; completed November, 1929. Total cost, $1,355.63, from market road funds.

Pacific Highway and Bybee Bridge section, 6.18 miles of oiling with 95 per cent oil, also approximately 2 miles of resurfacing. Beginning at Pacific Highway north of Medford to Bybee Bridge over Rogue River. Roadbed oiled with 95 per cent oil 16 feet in width. Work by county forces. Begun June, 1930; completed September, 1930. Total cost, $5,976.66, from market road funds.

Butte Falls Market Road No. 4

Derby-Butte Falls section, resurfacing at several points and stock piling crushed rock for future maintenance. Work by county forces. Begun June, 1929, completed March, 1930. Total cost $2,736.18 from market road funds.

Little Butte Creek Market Road No. 5

Eagle Point-Lake Creek section 5.06 miles of grading, crushed rock surfacing and small trestle bridges; Sta. 0 to 75 and Sta. 196 to 393.

Roadbed width 24 feet; surfacing width 16 feet; depth 8 inches, bridge width, 20 feet. Work by county forces; begun May 15, 1929; completed August 31, 1929. Total cost $49,759.78 from market road funds.

Brownsboro-Lake Creek section, 3.29 miles of grading and surfacing; Sta. 391+50 to Sta. 565.

Roadbed width 20 and 24 feet; surfacing width 16 feet, depth 8 inches. Work by county forces; begun May 1, 1930. Incomplete November 1, 1930. Cost to November 1, 1930, $29,263.33, market road funds. The two sections graded and surfaced on this road during the past two years, are a great improvement over the old road from Eagle Point to Lake Creek, as an excellent grade and alignment were secured.

Dead Indian Market Road No. 6

West Pompadour section 2.39 miles of grading, surfacing and stock piling 8,000 cubic yards of crushed rock for surfacing East Pompadour section. Sta. 84 to Sta. 150 and Sta. 240 to 300. Roadbed width 20 feet; surfacing width 12 feet, depth 8 inches to 10 inches. Work by county forces. Begun August 1, 1929; completed November 30, 1929. Total cost, $31,241.40, from market road funds.

East Pompadour and Summit section 2.81 miles of grading and surfacing; Sta. 189+50 to 230+39.5 and Sta. 300 to 407+70. Roadbed width 20 feet; surfacing 16 feet width by 8 inches depth. Work by county forces. Begun July 1, 1930; incomplete November 1, 1930. Cost to November 1, 1930, $20,296.52; market road funds.

The work on this market road which was performed the past two years has resulted in an improved road from a point approximately 1½ miles east of the Pacific Highway to near the Summit of Dead Indian Pass and eliminated some nearly impassable road when in its best condition.

Central Point Market Road No. 7

Four Corners-Crater Lake Highway section 1.51 miles of grading and surfacing. Sta. 0 at Four Corners to Sta. 80+05 at Crater Lake Highway. Grading width 26 feet; surfacing 20 feet width; 8 inches depth. Work by county forces. Begun July 1, 1930; not completed November 1, 1930. Expended to November 1, 1930, $2,173.62. This section is to be completed in 1931. The estimated cost is $10,582.95. The money expended to date is from the market road fund.

Central Point-Four Corners section 1.72 miles oiling. Width 18 feet. Beginning at pavement in Central Point to intersection with Table Rock Market Road. Work by county forces. Begun June, 1930; completed August, 1930. Total cost, $1,372.60, from market road funds.

JEFFERSON COUNTY

Since the Market Road Act took effect in 1920 a total of $186,626.21 has been made available for market roads in Jefferson County, of which $83,642.20 was from the state market road appropriation, $81,597.91 from county market road levies, and approximately $21,386.10 from cooperative funds such as district, motor license, general road fund, etc. Of this total $179,416.32 has been expended and the following work accomplished: 77.67 miles graded; 42.74 miles surfaced; maintenance during the last six years cost $4,585.54 and cooperation on state highway construction to the extent of $37,000.

During the last two years $27,570.96 has been spent and the following accomplished: 23.16 miles graded; 2.00 miles surfaced; maintenance cost $1,112.52.

STATUS OF MARKET ROAD SYSTEM, AS OF OCTOBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement		
		Surfaced with Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Madras-Mecca	15.34	4.80	10.00	0.54
2. Madras-Ashwood	27.50	7.85	11.00	8.65
3. Metolius-Grizzly	17.90	8.40	2.50	7.00
4. Culver-Grandview	11.00	1.02	....	9.98
5. Culver-Lamonta	9.80	6.60	3.20	....
6. Gateway-Trout Creek	3.45	2.72	0.73	....
7. Gateway-Mecca	5.00	1.52	....	3.48
8. Madras-Grizzly	17.31	2.00	15.31	....
9. Lamonta-Prineville	6.00	....	....	6.00
Total in miles	113.30	34.91	42.74	35.65

Jefferson County is sparsely settled, valuations are low and the market road fund is one of the lowest in the state. Most of the towns are on the highway and the population is so scattered that no one road will ever receive much traffic and the country will never produce much more or support more population unless irrigation is resorted to. Low standard roads with narrow surfacing of local materials are necessary if sufficient mileage is to be constructed to reach out into these sparsely settled sections.

The County Court has purchased two tractor and blade outfits, revolving fresnoes, an air compressor, etc., and have a good organization to handle this equipment. Solid rock cuts are shot up and the material bladed over the side. The economy in using this equipment is apparent when the average cost per mile, for grading where slopes on the sidehill were steep and all hard material and considerable solid rock that had to be drilled and shot, was $1,250 for a roadbed 20 feet or more in width. In flat country some of the road is built for as little as $150 per mile.

Considering the valuation of the county and other conditions, the road work is well done and well managed. The work is all under the direction of the County Court; J. M. King, Judge; T. A. Power and F. E. Stangland, Commissioners. A. R. Schriver is County Engineer, dividing his time equally between Jefferson and Crook counties.

Madras-Ashwood Market Road No. 2

In 1928, a contract to grade from Sta. 0 at Ashwood to the top of the grade at Sta. 183 was awarded to Brown and Harrison in August, work completed January, 1929. Roadbed 16-foot class "C". Report of cost in report of 1927-1928, $5,779.07. Total cost, $12,950.79. In 1929, county forces graded from Sta. 390 (0+00 at Ashwood) to Sta. 580. Cost $4,002.69, $800 of this being paid from the general road fund. In 1930, county forces graded from Sta. 390 to Sta. 183, cost $5,444.12. Roadbed from Sta. 183-580, 20-foot class "C".

Culver-Lamonta Market Road No. 5

In 1930, county forces graded from Sta. 250 (0+00 at highway) to Sta. 430 at the junction with Market Road No. 9 near Lamonta. Cost $176.05. Roadbed 22 feet.

Madras-Grizzly Market Road No. 8

In 1928, the road from Grizzly post-office at Sta. 0 was graded to Sta. 260. Reported in 1928, $6,635.27; complete cost, $7,645.80. In 1930, county forces are reshaping the road and surfacing from Grizzly post-office, Sta. 0 to Sta. 159 using 1½-inch crushed rock. Estimated cost, $3,712.50. Cost to date, $2,679.52. Surfaced section 9 feet wide by 6 inches deep.

In 1929, county forces graded from Sta. 21+49 (0+00 at highway), Sta. 21+49 also being the junction with Market Road No. 2, to Sta. 675+66 = Sta. 260+02 of the 1928 project. Roadbed, 22 feet. Cost $9,494.19, of which amount $900 was paid out of the general road fund. Length of project, 12.39 miles.

Lamonta-Prineville Market Road No. 9

Surveys are in progress from the end of the diagonal road in Crook County to Lamonta. When this section was homesteaded, roads were run on property lines. Now that the property is all in the ownership of two or three people or the county, a diagonal line is being surveyed to cut down distance, improve alignment and get construction work more suitable to the county equipment. Cost of surveys to October first, $52.

JOSEPHINE COUNTY

Beginning with the year 1920 a total of $335,531.39 has been made available for market roads in Josephine county, of which $121,354.92 was from the state market road appropriation, $177,820.34 from county market road levies, and approximately $36,356.13 from county cooperative funds, such as bonds, special district levies, general road funds, motor license funds, O. & C. funds, etc. Of this amount $326,153.10 has been expended and the following work accomplished: 44.4 miles graded; 44.4 miles surfaced; 1 mile oil surface treated; 6 miles resurfaced, and maintenance during the last six years costing $34,111.98.

During the two years just past, $48,515.76 has been expended and the following accomplished: 3.77 miles graded; 3.77 miles surfaced; 1 mile oiled, surface treatment; 6 miles resurfaced and an average of 40.63 miles maintained.

Josephine county have continued their market road program during the past two years, the new construction being on the Applegate Bridge, Riverbanks Farm Market Road No. 3, from the Redwood Highway down the Applegate and Rogue Rivers for several miles. This was a heavy piece of grading and surfacing material was from an old placer gravel deposit. This gravel bank contains gold which escaped during sluicing operations and while in small quantities it can still be said this market road has been surfaced with gold. A new concrete bridge is under construction across the Rogue River in Grants Pass replacing an old steel structure on the Pacific Highway. This old steel bridge will be moved to a location at Riverbanks farm spanning the Rogue River and connecting Market Road Nos. 2 and 3 and eliminating a ferry. Josephine county purchased a crushing and screening plant during the last two years and plan to crush material with which to oil some of their market and county roads in 1931 and 1932. A small amount of oiling was done during the last two years. The county have adequate maintenance equipment and their roads are well maintained.

During the past two years the work has been under the direction of Judge C. G. Gillette and County Commissioners L. R. Conklin and J. L. Stanbrough. Market road engineering and supervision of maintenance has been handled by J. G. Bromley, County Engineer.

STATUS OF MARKET ROAD SYSTEM, AS OF NOVEMBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement		
		Heavy Oil Surface Treatment	Surfaced with Rock or Gravel	Not Graded to Market Road Standards
1. Grants Pass-Williams	23.1	1.0	22.1	......
2. Grants Pass-Eisman	11.0	......	7.5	3.5
3. Applegate Bridge-Riverbanks Farm	9.5	......	9.5	......
4. Merlin	9.3	......	4.3	5.0
Total in miles	52.9	1.0	43.4	8.5

Applegate Bridge-Riverbanks Farm, Market Road No. 3

Shaw Creek-Pickett Creek Section, grading and gravel surfacing 3.08 miles, Sta. 169 to Sta. 360; roadbed width, 18 feet; surfacing, 14 feet wide, 6 inches deep. Work by county forces; begun June 15, 1929; not completed to November 1, 1930. Expended to November 1, 1930, $27,324.43, market road funds. Total estimated cost, $32,608.62. This work will be completed in 1931.

Applegate Bridge-Shaw Creek, crushed gravel resurfacing 6 miles from Sta. 0+00 at Redwood Highway on Applegate River to Sta. 316+80 at Shaw Creek. Surfacing width, 16 feet; depth, 6 inches. Work by county forces; begun September 1, 1930; not completed to November 1, 1930. Expended to date, $1,603.64, from market road funds. Total estimated cost, $7,380. This section is to be completed in 1931. The old surfacing was very badly worn and broke up in many places during the winter of 1929 and 1930.

Merlin Market Road No. 4

Jump Off Joe Bridge to Quartz Creek Section, 0.2 mile of grading and surfacing, from Sta. 230 to 245. Grade 24 feet wide; surface 16 feet wide, 4 inches deep. Work by county forces; begun June 1, 1929; completed December 31, 1929. Total cost, $1,143.81, from market road funds.

KLAMATH COUNTY

Beginning with the year 1920, a total of $935,033.96 has been made available for market roads in Klamath County, of which $358,017.46 was from the state market road appropriation, $383,159 from county market road levies, and approximately $193,857.50 from county cooperative funds, such as bonds, special district levies, general road funds, motor license funds, etc. Of this amount, $935,702.67 has been expended and the following work accomplished: 91.59 miles graded, 105.55 miles surfaced, 2.5 miles paved with asphaltic macadam, 11.10 miles road oil mixed type, 13.40 miles resurfaced; also maintenance during the last six years costing $35,458.85; cooperation on state highways to the amount of $22,783.62.

During the two years just past, $195,290.98 has been expended and the following accomplished: 19.0 miles graded, 27.66 miles surfaced, 2.50 miles of asphaltic macadam constructed, 11.10 miles road oil mixed type, 13.40 miles resurfaced; $4,287.78 cooperation on state highways and an average of 114.00 miles maintained.

STATUS OF MARKET ROAD SYSTEM, AS OF NOVEMBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement			
		Heavy Oil Surface Treatment	Light Oil Surface Treatment	Surfaced with Rock or Gravel	Graded to Market Road Standards
1. Klamath Falls-Midland-State Line	18.40	2.50	....	15.90	....
2. Olene-Bonanza-Poe Valley	14.70	....	....	14.70	....
3. Bonanza-Lorella, North Side	11.10	....	....	11.10	....
4. Bonanza-Lorella, South Side	8.20	....	....	8.20	....
5. Lorella-Langell Valley. East Side	11.30	....	....	11.30	....
6. Lorella-Langell Valley, West Side	9.60	....	....	9.60	....
7. Midland East to Highway	5.00	....	....	5.00	....
8. Williamson River-Chiloquin	6.80	....	6.80	....	....
9. Klamath Falls, Northwest	8.00	....	....	8.00	....
10. Yonna Valley	4.60	....	....	4.60	....
11. Chiloquin-Klamath Agency	4.30	....	4.30	....	....
12. Whitney Bridge Road	1.80	....	....	1.80	....
13. Klamath Falls-Lakeview Highway	....	....	....	....	....
14. Bonanza-Lorenz Mill	7.90	....	....	7.90	....
15. Fort Klamath-Wood River	6.15	....	....	6.15	....
16. Fort Klamath-West	5.00	....	....	5.00	....
17. Seven Mile-Fort Klamath	4.67	....	....	4.67	....
18. Poe Valley	11.20	....	....	....	11.20
Totals	138.72	2.50	11.10	113.92	11.20

The bond issue in Klamath County voted in May, 1927, for road construction has been used on county and market roads and a large part of the market road system has been completed.

This county is fortunate in having a number of volcanic cinder deposits and other material which can be loosened with powder and loaded with a power shovel very cheaply. As a result surfacing can be placed on many miles of road at a minimum cost.

During 1929 there was added to the Klamath County market road system Market Roads No. 15, Fort Klamath-Wood River; No. 16, Fort Klamath-West; No. 17, Seven Mile-Fort Klamath, and No. 18, Poe Valley. These roads were either all or partly constructed by bond money in previous years.

During 1930, the county started an oiling program, placing an emulsified asphalt macadam on a section of the Midland Market road, south of Klamath Falls and a light oil road mix on the Market Roads leading west and south from the town of Chiloquin in the Klamath Indian Reservation.

The county has a number of maintenance machines and the roads, in general, are well maintained.

All engineering work during the past two years has been under the direction of E. B. Henry, County Engineer, and construction work by county forces is directed by Chas. Spidell, Roadmaster. The work has been directed by County Judge Fred R. Goddard and Commissioners W. R. Williams and Silas Obenchain.

Klamath Falls-Midland-State Line Market Road No. 1

State Highway-Shaw-Bertram Mill section, 2.3 miles of grade widening, raising fills and resurfacing with crushed rock, also constructing 2 inches depth emulsified asphalt road mixed macadam. Roadbed width, 22 feet; surfacing, 18 feet wide, 8 inches deep; asphalt macadam, 18 feet wide, 2 inches deep. Work by county forces, and by Dunn & Baker, contractors; begun March 1, 1930; completed July 15, 1930. Total cost, $21.871.75, from market road funds.

Olene-Bonanza-Poe Valley Market Road No. 2

Olene-Bonanza section, widening grade and placing guard fence, Sta. 17+50 to Sta. 19+00; placing culverts at several points and constructing concrete box culvert near Upper Gap. Work by county forces; begun July, 1929; completed October, 1929. Total cost, $1,220.53, market road funds.

Lorella-Langell Valley, East Side, Market Road No. 5

Malone Bridge-Campbell School House section, 9.86 miles grading and surfacing, Sta. 0+00, south end of Langell Valley, to Sta. 520+66.2, east of Lorella. Roadbed width, 22 feet; surfacing width, 12 feet; depth, 8 inches. Grading by county forces; surfacing by G. I. Stebbins, contractor. Work commenced September 1, 1929; completed September 20, 1930. Total cost, $34,812.68, market road funds. The surfacing material was hauled from a pit west of Lorella. This material is very soft but for light traffic roads makes an excellent surface. After drilling and breaking with powder the material can be loaded with a power shovel at a very nominal cost.

West Side Langell Valley Market Road No. 6

Malone Bridge to junction with Market Road No. 4 section, 10.0 miles of surfacing. From Malone Bridge, south end of Langell Valley, to junction with Market Road No. 4, south of Lorella, surfacing width, 12 feet; depth, 4 inches. Work by G. I. Stebbins, contractor. Commenced August 20, 1930; completed September 28, 1930. Total cost, $18,929.65, market road funds.

The material for this section was hauled from the pit west of Lorella.

Williamson River-Chiloquin Market Road No. 8

Williamson River-Chiloquin Forest Mill section; 6.8 miles resurfacing and road mix oiling with 60-70 per cent road oil. From The Dalles-California Highway at Williamson River to Forest Mill, north of Chiloquin. Work by county forces and Dunn & Baker, contractors. Work commenced April 15, 1930; completed August 20, 1930. Total cost, $35,178.44, market road funds. This section was resurfaced with 8 inches of pit run gravel from a pit near Williamson River; the material contained an excess of fine material. The road was scarified and the top 2 inches mixed with oil.

Klamath Falls-Northwest Market Road No. 9

Wocus Bridge-Forest Boundary section, widening roadbed and shoulders on fills at several points. Work by county forces; commenced March, 1929; completed June, 1930. Total cost, $2,826.60, market road funds.

Chiloquin-Klamath Agency Market Road No. 11

The Dalles-California Highway to Chiloquin section, 4.7 miles resurfacing and road mix oiling. Resurfacing, 16 feet wide, 4 inches deep; oil mixed 2 inches deep, using 60-70 per cent road oil. Work by county forces and Dunn & Baker, contractors. Work commenced April 15, 1930; completed August 20, 1930. Total cost, $19,296.18, market road funds. The material used in resurfacing this section was pit run gravel and contained an excess of fine material. The road was scarified and the top 2 inches mixed with oil.

Klamath Falls-Lakeview Highway and Market Road No. 13

Klamath County participated in the cost of constructing the Bly-Forest Boundary section of this highway and during this biennium a total of $4,587.48 from market road funds was paid on this work.

Bonanza-Lorenz Mill Market Road No. 14

Bonanza-Lorenz Mill section, 7.80 miles graded and surfaced, Sta. 355+87.5, at Bonanza, to Sta. 774, on Klamath Falls-Lakeview Highway. Roadbed width, 22 feet; surface, 12 feet wide, 8 inches deep; south, 1.65 miles cinders; north, 6.15 miles crushed rock. Grading entire section and surfacing south 1.65 miles by Dunn & Baker, contractors; north 5.8 miles surfacing by Joslin & McAllister, contractors. Work commenced November, 1928; completed December 9, 1929. Total cost,

$40,516.02, market road funds. The completion of this market road provided a good surfaced detour for travel while the Dairy-Lorenz Mill section of the Klamath Falls-Lakeview Highway was under construction the past two years.

Poe Valley Market Road No. 18

Poe Valley-Malin section, 8.6 miles surfacing with cinders, Sta. 0+00, near Malin at south end of project, to Sta. 590+81.0, at junction with Market Road No. 2, except several sections where natural surfacing material was encountered on the grade. Surfacing, 12 feet wide, 8 inches in depth. L. F. Ireton, contractor. Work commenced October, 1930; no expenditures to November 1, 1930, from market road funds. Estimated cost, $24,900. A part of this sum is expected to be charged to the county bond fund.

The grading of this road was completed in 1929; expenditure for construction was from the bond fund. Surfacing material will be volcanic cinders from a pit near the north end of the project.

LAKE COUNTY

Beginning with the year 1920, a total of $372,809.18 has been made available for market roads in Lake County, of which $159,498.58 was from the state market road appropriation, $165,627.52 from county market road levies, and approximately $47,683.08 from county cooperative funds, such as bonds, special district levies, general road funds, motor license funds, etc. Of this amount $348,687.29 has been expended and the following work accomplished: 16.61 miles graded, 11.4 miles surfaced; also maintenance during the last six years costing $5,269.30; cooperation on state highways to the amount of $106,504.

During the two years just past, $43,652.57 has been expended and the following accomplished: 5.21 miles graded, cooperation on state highways to the amount of $23,882.54; and an average of 11.4 miles maintained.

The two most important roads in Lake County have been the Klamath Falls-Lakeview Highway which is also Market Road No. 2, and the Fremont Highway, Market Road No. 8. These are on the state highway system and the county has cooperated in their construction. The Klamath Falls-Lakeview Highway and Market Road has been completed during the biennium, and the Fremont Highway, Market Road No. 8, is now all completed or under contract except for a distance of some 6 or 7 miles between Silver Lake and Summer Lake.

The next most important road in the county in the market road system is the Lakeview-Adel Market Road No. 1, connecting the Goose Lake Valley and Lakeview with Adel in Warner Valley; good progress has been made on this road during the biennium and it is expected that the grading and surfacing, where needed, can be finished during 1931 and 1932.

STATUS OF MARKET ROAD SYSTEM, AS OF NOVEMBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement		
		Surfaced with Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Lakeview-Adel	28.00	11.40	8.21	8.39
2. Lakeview-Klamath Falls Highway	---------	---------	---------	---------
3. Adel, North	20.00	---------	---------	20.00
4. Adel, South	7.00	---------	---------	7.00
5. Goose Lake	15.00	---------	---------	15.00
6. Bayers Creek	7.00	---------	---------	7.00
7. Silver Lake, West	16.00	---------	---------	16.00
8. Fremont Highway	---------	---------	---------	---------
Total	93.00	11.40	8.21	73.39

All market road work has been handled by B. J. Crowley, Resident Engineer, for the State Highway Commission, under the direction of County Judge H. E. Kelty and Commissioners F. S. Fisher and W. B. Snyder.

Lakeview-Adel Market Road No. 1

Blue Creek-Drake Creek section, 5.21 miles grading, units Nos. 1 and 2, Sta. 750, near Blue Creek, to Sta. 1077, near Drake Creek. Roadbed width varies from 16 feet to 20 feet. Work by county forces; begun April, 1930; incomplete November 1, 1930. Expended to November 1, 1930, $14,173.28; market road funds, $13,923.14; general road funds, $216.61; district funds, $33.53. Lake County purchased a power shovel, compressor and tractor during the early part of 1930 and this equipment has been used to good advantage.

Adel, South, Market Road No. 4

Bridge over Deep Creek at Adel, one 45-foot timber span and approaches. Work by S. J. Hubbard, contractor; begun May, 1929; completed October, 1929. Total cost, $4,788.67, from market road funds.

Fremont Highway Market Road No. 8

Expended as cooperation during the last two years, $23,882.54; market road funds on state projects.

LANE COUNTY

Beginning with the year 1920, a total of $1,697,859.55 has been made available for market roads in Lane county, of which $692.502.59 was from the state market road appropriation, $635,838.68 from county market road levies and approximately $369,518.28 from county cooperative funds, such as bonds, special district levies, general road funds, motor license funds, O. & C. funds, etc. Of this amount $1,707,411.64 has been expended and the following work accomplished: 170.14 miles graded; 183.91 miles surfaced; 34.8 miles resurfaced; 26.3 miles oiled, surface treatment, light oil; 75.2 miles oiled, surface treatment, heavy oil; 36 miles reoiled; 9.7 miles grade widened and major bridges costing $116,436.24. Also maintenance during the last six years costing $294,393.43. Cooperation on state highways to the amount of $102,897. Cooperation on forest highways to the amount of $34,891.

During the past two years, $357,670.60 has been expended and the following accomplished: 39.29 miles graded; 55.23 miles surfaced; 34.8 miles resurfaced; 26.3 miles oiled, surface treatment, light oil; 75.2 miles oiled, surface treatment, heavy oil; 36 miles reoiled; 9.7 miles grade widened; and major bridges costing $34,616.24; and an average of 385 miles were maintained.

During the past two years Lane county made noteworthy progress on the market road system. Market road mileage was increased 65.3 miles by extending the present system; the county market road mileage now totals 501.4, the greatest mileage on any county system.

As will be noted further on in this report, approximately 39 miles were graded, 55 miles surfaced, 35 miles resurfaced, 75 miles oiled with heavy oil and 36 miles oiled with light oil as a dust layer. Two bridges of considerable importance were constructed. The Mary White bridge over the Coast Fork of the Willamette, east of Cottage Grove, and a bridge east of Creswell over the Coast Fork; this bridge was assembled from the steel taken from the old bridge across the Willamette River at Springfield. A number of wooden spans of varying length were constructed, as were a large number of pile timber trestles.

One regrading and surfacing job of particular note was the Mapleton Hill, west of Rainrock on the lower Siuslaw River. This piece of work permits all-year travel by car from the Willamette Valley to Florence. Early in 1929 the county purchased road oiling equipment and during the past two years oiled many miles of road at a very reasonable cost.

All engineering work has been under the direction of P. M. Morse, County Engineer. Ed Tuller is Superintendent of construction work. Art Stryker has handled all bridge work as bridge superintendent. All work in the county has been supervised by County Judge C. P. Barnard and Commissioners Clinton Hurd and O. E. Crowe.

[LANE]

STATUS OF MARKET ROAD SYSTEM, AS OF NOVEMBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement				
		Heavy Oil Surface Treatment	Light Oil Surface Treatment	Surfaced with Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Territorial, North Section	6.7	......	......	6.7	......	......
2. Territorial, South Section	32.3	......	......	31.0	......	1.3
3. Alvadore	12.1	......	......	12.1	......	......
4. Prairie	13.2	13.2	......	......	......	......
5. Fergueson	6.5	......	......	6.5	......	......
6. Turnbow	1.5	......	......	1.5	......	......
7. High Pass	8.5	.6	......	7.9	......	......
8. Meadow View	4.1	......	......	2.8	......	1.3
9. Georgetown	2.5	......	......	2.5	......	......
10. Clear Lake, East Section	5.7	5.0	......	.7	......	......
11. Clear Lake, West Section	4.1	......	......	3.0	......	1.1
12. Elmira	11.6	4.3	......	7.3	......	......
13. Noti	36.9	......	......	18.1	.6	18.2
14. Poodle Creek	3.8	......	......	3.1	......	.7
15. Crow-Vaughn	10.0	......	......	8.0	1.0	1.0
16. Danebo Road	1.5	......	......	1.5	......	......
17. Crow	8.7	......	......	5.9	......	2.8
18. Warren	2.2	......	......	......	1.0	1.2
19. Hadleyville	12.6	......	......	......	12.6	......
20. Hawkins Hill	2.5	......	......	2.5	......	......
21. Torkelson	6.1	......	......	3.0	.5	2.6
22. Wolfe Creek	39.0	......	......	7.9	4.7	26.4
23. Lorane Highway	15.0	2.0	......	13.0	......	......
24. Fox Hollow	12.0	......	......	5.8	......	6.2
25. Creswell, West	7.0	2.5	......	......	......	4.5
26. Lynx Hollow	3.0	......	......	1.0	......	2.0
27. Cottage Grove-Lorane	18.4	4.0	......	13.6	......	.8
28. London Springs	15.5	5.0	......	8.5	2.0	......
29. Mosby Creek	3.9	......	......	2.5	.9	.5
30. Row River	20.0	1.0	......	14.0	3.0	2.0
31. Delight Valley	4.0	......	......	1.0	......	3.0
32. Cloverdale	7.2	1.1	......	6.1	......	......
33. Goshen-Pleasant Hill	6.1	2.7	......	3.4	......	......
34. Lost Valley	4.2	......	......	4.2	......	......
35. Jasper, South	3.8	......	......	2.0	1.4	.4
36. Springfield-Lowell	16.9	......	6.0	8.4	......	2.5
37. Camp Creek	8.2	......	......	5.0	......	3.2
38. Mohawk	17.7	17.7	......	......	......	......
39. Mabel	9.7	......	.8	2.0	.2	6.7
40. Harlow-Mohawk	3.0	3.0	......	......	......	......
41. Coburg	12.9	12.9	......	......	......	......
42. Game Farm	3.4	.2	1.8	1.4	......	......
43. Hill Road	4.0	......	......	3.5	......	.5
44. Deadwood	22.3	......	......	22.3	......	......
45. Indian Creek	11.6	......	......	11.6	......	......
47. North Fork	19.5	......	......	18.7	......	.8
48. River Road	2.8	......	......	2.8	......	......
49. Glenada-Ada	14.7	......	......	9.0	......	5.7
50. Blachly-Horton	2.5	......	......	2.5	......	......
51. Chase Gardens	3.0	......	3.0	......	......	......
Totals	504.4	75.2	11.6	294.3	27.9	95.4

As is previously mentioned, Lane county embarked upon an oiling program in 1929. $6,578 were expended for equipment and approximately 36 miles were oiled with light road oil, heavy asphaltic oils and emulsified asphalt. With the exception of the Mohawk Market Road no separate report for each market road has been made. Some of the roads oiled, with type of treatment and approximate mileage are given as follows:

Market Road No. 4, north of Eugene, 2 miles 90-95 per cent oil.

Market Road No. 12, northwest of Eugene, 2 miles 90-95 per cent oil.

Market Road No. 19, west of Eugene, 1 mile 90-95 per cent oil.

Market Road No. 27, west of Cottage Grove, 1 mile emulsified asphalt.

Market Road No. 30, east of Cottage Grove, 1.5 miles emulsified asphalt.

The total expended in 1929 for road oiling was $32,959.88. As previously mentioned, $6,578 was expended for oiling equipment and the balance of $26,381.88 was expended for oiling approximately 36 miles of road.

During 1930, a total of $53,076.66 was expended, $45,070.26 of O. & C. funds and $8,006.40 of general funds. Heavy asphaltic oil 90 to 95 per cent and some emulsified asphalt were applied on 62.9 miles; 36 miles oiled in 1929 were reoiled and 26.3 miles were given a dust laying coat only.

Some of the sections oiled or reoiled are given below:

Market Road No. 4, Eugene to Junction City, 13.2 miles 90-95 per cent oil, 11.2 miles new oil, 2 miles reoiled.

Market Road No. 7, west of Junction City, 0.6 mile heavy asphaltic oil.

Market Road No. 10, Clear Lake east, 5.0 miles heavy asphaltic oil.

Market Road No. 12, west of Eugene, 4.3 miles new and reoil, heavy asphaltic oil.

Market Road No. 23, southwest of Eugene, 2.0 miles heavy asphaltic oil.

Market Road No. 25, Creswell west, 2.5 miles heavy asphaltic oil.

Market Road No. 27, west of Cottage Grove, 4.0 miles heavy oil.

Market Road No. 28, Cottage Grove toward London Springs, 5.0 miles heavy oil.

Market Road No. 38, Springfield to Wendling, 17.7 miles reoiled with 90-95 per cent asphaltic oil.

Market Road No. 41, Eugene to Coburg, 12.9 miles new oil 90-95 per cent asphaltic oil. And a number of other roads on which short sections were surface treated.

Territorial, North, Market Road No. 1

Bear Creek bridge and approaches, Sta. 106+60 to Sta. 108+60, 9-19-foot spans, 18-foot roadway. Work by county forces; begun June, 1929; completed September, 1929. Total cost, $1,743.78.

Territorial, South, Market Road No. 2

Four miles north of Elmira to 2 miles south of Crow, resurfacing at various points; work by county forces; begun February, 1929; completed October, 1930. Total cost, $5,390.14; market road funds, $4,133.22; other funds, $1,256.92.

Fergueson Market Road No. 5

Bridge over slough, west of West Side Pacific Highway, Sta. 44+07 to Sta. 49+60. Seven 19-foot spans and fill approaches; bridge 20 feet wide, grade 30 feet wide. Work by county forces; begun June, 1929; completed September, 1929. Total cost, $1,650,48; market road funds, $1,618.98; general fund, $31.50.

High Pass Market Road No. 7

Junction City Section, 0.5 mile grading, surfacing and 310 feet of pile trestle bridges, Sta. 34 to Sta. 60. Roadbed width, 30 feet; surfacing, 20 feet wide, 10 inches deep; bridges 20 feet wide. Work by county forces; begun May, 1930. Expended to November 1, 1930, $8,143.17; market road funds, $6,486.99; general funds, $1,656.18.

Clear Lake, East Section, Market Road No. 10

Pacific Highway-West, 5 miles, placing resurfacing gravel at several places. Work by county forces; begun May 1, 1929; completed September 30, 1930. Total cost, $923.52; market road funds, $744.57; district funds, $178.95.

Clear Lake, West Section, Market Road No. 11

Clear Lake-Long Tom Section, 0.45 mile, grading and surfacing and 6 trestle bridges, a total of 589 feet, Sta. 70 to Sta. 115. Work by county forces; begun April, 1929; completed August, 1929. Total cost, $11,003.47; market road funds, $9,253.72; bond funds, $1,749.75.

Elmira Market Road No. 12

A section from Mile Post 4.5 to Mile Post 11.7, near Hemenway Hill to Territorial Road. Widening grade and placing additional crushed gravel. Work by county forces; begun February, 1930; completed November, 1930. Expended to November 1, 1930, $2,737.54.

Noti Market Road No. 13

Lyons Schoolhouse to Fowler's Section, 4 miles graded and surfaced, Sta. 107, which is 0.65 mile west of Badger Mountain, to Sta. 320. Roadbed width, 20 feet; surfacing, 12 to 14 feet wide, 8 inches deep. Also five 19-foot timber trestle spans. Work by county forces; begun March, 1928; completed August, 1930. Total cost, $34,869.82; market road funds, $24,655.59; district funds, $10,214.23. Expended previous biennium, $10,297.50. This biennium, $24,572.32, of which $14,358.09 were market road funds, and $10,214.23 were district funds.

Poodle Creek Market Road No. 14

Market Road No. 12 to Long Tom River, 3.8 miles resurfacing. Work by county forces; begun April, 1930; completed November, 1930. Cost to November 1, 1930, $1,186.43.

Crow-Vaughn Market Road No. 15

Vaughn-Noti Section, grading, surfacing and undercrossing of Southern Pacific Railroad Company track, 3.09 miles, Sta. 360 at Vaughn to Sta. 523+16 at Noti. Work by county forces; begun April, 1929; incomplete November 1, 1930. Expended to November 1, 1930, $16,402.12; market road funds, $13,776.64; district funds, $2,467.52; general funds, $157.96. Total estimated cost, $28,716, of which $3,000 is for undercrossing of Southern Pacific Railroad of which the railroad company will pay $1,500.

Crow-Vaughn Section, resurfacing places where the gravel surfacing broke through during the spring of 1930. Work by county forces; begun April, 1930; completed November, 1930. Total cost to November 1, 1930, $780.55.

Hadleyville Market Road No. 19

Placing resurfacing, extending culverts and ditching at Coyote Creek in Mile 1, 2 and 10. Work by county forces; begun March, 1929; completed October, 1929. Total cost, $2,848.66; market road funds, $2,449.90; general funds, $398.76.

Torkelson Market Road No. 21

Spencer Section, 2.50 miles grading, surfacing and timber bridges, Sta. 0, at east end of road to Sta. 96 equal Sta. 54, Sta. 54 to Sta. 89. Roadbed width, 24 feet; surfacing, 12 feet wide, 8 inches deep. Work by county forces; begun May, 1929; incomplete November 1, 1930. Expended to November 1, 1930, $11,604.25; market road funds, $11,532.25; general funds, $72.

Wolf Creek Market Road No. 22

Timbered Ridge to Swamp Creek Section, 2.23 miles grade and surfacing, Sta. 0 at Timbered Ridge to Sta. 120 at Swamp Creek. Roadbed width, 16 feet; surfacing, 12 feet wide, 8 inches deep. Work by county forces; begun March, 1929; completed December, 1929. Total cost, $8,180.39; market road funds, $4,824.71; general fund, $3,355.68.

High Grade Section, grading 0.34 mile, Sta. 100 to Sta. 118; roadbed width, 16 feet. Work by county forces; begun May, 1929; incomplete November 1, 1930. Expended to November 1, 1930, $4,989.17, district funds.

Wolfe Creek Section, 1.6 miles grading and surfacing. Roadbed 20 feet wide, surfacing 12 feet wide, 6 inches deep. Work by county forces; begun July, 1929; incomplete to November 1, 1930. Expended to November 1, 1930, $10,102.71; market road funds, $5,006.90; district funds, $5,095.81.

Lorane Market Road No. 23

Eugene-Gillespie Corners, 3.5 miles grade widening and resurfacing, Mile 3 to Mile 6.5. Work by county forces; begun October, 1929; completed July, 1929. Total cost, $4,970.83.

Fox Hollow Market Road No. 24

Popoff Section, 2.25 miles, grading and surfacing, Sta. 85 to Sta. 204. Roadbed width, 24 feet; surfacing, 8 feet wide, 6 inches deep. Work by county forces begun May, 1930; completed September, 1930. Total cost, $8,207.27; market road funds, $7,963.62; district funds, $243.65.

Cottage Grove-Lorane Market Road No. 27

Cottage Grove, west section, 1.04 miles, grading and surfacing, Sta. 23 at cemetery west of Cottage Grove, west to Sta. 68. Roadbed width, 26 feet; surfacing, 16 feet wide, 8 inches deep. Work by county forces; begun May, 1930; incomplete to November 1, 1930. Expended to November 1, 1930, $6,750. The alignment was changed materially from the old road and over a portion of the new line, the fill was made from a channel change of the creek.

London Springs Market Road No. 28

Resurfacing Mile 6 to Mile 11.5 at London; 5.5 miles crushed gravel resurface. Work by county forces; begun March, 1930; completed March, 1930. Total cost, $2,633.74.

London Hill Section, 3.71 miles grade and surface, Sta. 564 at London Store to Sta. 760 at Douglas County line. Roadbed width, 20 feet; surfacing, 12 feet wide, 8 inches deep. Work by county forces; begun July, 1928; incomplete to November 1, 1930. Expended to November 1, 1930, $32,868.77; market road funds, $18,366.11; district funds, $14,466.80; general funds, $35.86. Expended previous biennium, $15,432.21; expended this biennium, $17,436.56.

Mary White Bridge Section, 0.48 mile grade, surface and one 90-foot steel span with 247 lineal feet of pile trestle over Coast Fork Willamette River, Sta. 33 to Sta. 58. Work by county forces; begun April, 1929; completed September, 1930. Total cost, $11,945.47; market road funds, $9,671.22; general fund, $2,244; district funds, $30.25. The construction of this bridge and grade eliminated an old structure and very sharp curves.

In the spring of 1929, resurfacing with crushed gravel was done by county forces from Mile 1 to Mile 4. Total cost, $2,383.18.

Mosby Creek Market Road No. 29

Mosby Creek Section, 4.00 miles grade and surface, Sta. 103 to Sta. 312 at end of market road. Roadbed width, 30 feet; surfacing, 16 feet wide, 8 inches deep. Work by county forces; begun April, 1930; incomplete to November 1, 1930. Cost to November 1, 1930, $13,470.03; market road funds, $7,640.92; district funds, $5,829.11. Estimated cost, $20,885.

Row River Market Road No. 30

Red Bridge-Disston Section, 4.09 miles grade and bridge, Sta. 189 at Red Bridge east to Sta. 189=Sta. 15, Sta. 15 east to Sta. 207 at Disston. Roadbed width, 22 feet. Work by county forces and Earl

McNutt, contractor. Work begun July, 1928; incomplete to November 1, 1930. Expended to November 1, 1930, $29,637.98. Expended previous biennium, $11,259.93; market road funds, $5,943.87; district funds, $5,316.06. Graded 1928, 1.63 miles; graded this biennium, 2.15 miles; also one 90-foot timber truss bridge and 105 lineal feet of timber trestle was constructed. Expended this biennium, $18,378.05, market road funds.

Cloverdale Market Road No. 32

Creswell Bridge Section, 0.59 mile, grade, surface and bridge, Sta. 52, one mile east of Creswell, to Sta. 83 on east bank of Coast Fork Willamette River. Work begun September 1928; incomplete November 1, 1930. Grade 30 feet wide; surfacing 16 feet wide, 8 inches deep. Grading and surfacing by county forces. Bridge consisting of 267 feet steel truss constructed by O. N. Pierce, contractor. Cost to November 1, 1930, $23,261.45; market road funds, $1,775.20; general fund, $200.42; bond fund, $1,009.08; O. & C. funds, $20,276.75. The concrete piers and 399 feet pile trestle were constructed by county forces. The steel span was a part of the old Springfield bridge which was dismantled and a part reassembled for use at this point.

Springfield-Lowell Market Road No. 36

Little Fall Creek Bridge Section, 0.17 mile grade and surface and one 90-foot timber truss with 90 feet pile trestle approaches. Work by county forces; begun May, 1929; completed August, 1929. Grade width, 24 feet; surface, 16 feet wide, 8 inches deep. Total cost, $7,566.01; market road funds, $7,415.24; general fund, $150.77.

Regrading superelevation on curves, widening short section of grade and resurfacing at several places, between Springfield and Lowell. Work by county forces; begun April, 1929; completed September, 1930. Total cost, $3,991.11.

Mohawk Market Road No. 38

Hayden Bridge-Wendling Section, 14 miles oil surface treatment, Mile 3 to Mile 17. Work by county forces; begun March, 1929; completed August, 1929. Total cost, $6,671.67; market road funds, $233.45; general fund, $6,349.69; district funds, $88.53. An excellent job of oil surface treatment was obtained on this section.

McGowan Bridge Section, 300 feet grading, surfacing and three 19-foot pile trestles, Sta. 290 to Sta. 293. Roadbed and bridge 20 feet wide; surfacing 16 feet wide, 8 inches deep. Work by county forces; begun March, 1929; completed May, 1929. Total cost, $1,554.89; market road funds, $1,328.84; district funds, $226.05.

Mabel Market Road No. 39

Oshkosh Mill-Linn County line section, 1.82 miles grading, Sta. 164, about 8 miles north of Marcola, to Sta. 260 at Linn County line. Roadbed width, 20 feet. Work by county forces; begun August, 1929; incomplete to November 1, 1930. Expended to November 1, 1930, $9,379.94; market road funds, $7,952.51; district funds, $1,427.43.

This market road in Lane County connects with Market Road No. 17 in Linn County. It is expected that Linn County will work on a connection in their county during the next biennium.

Harlow-Mohawk Market Road No. 40

Entire market road, 3.0 miles in length, resurfaced with a light course of crushed gravel. Work by county forces; begun April, 1930; completed July, 1930. Total cost, $577.40.

Deadwood Market Road No. 44

Base course surfacing, Mile 15 to Mile 24; 9 miles crushed rock, 8 feet wide, 4 inches deep. Work by county forces; begun June, 1929; completed October, 1929. Total cost, $8,399.34; market road funds, $5,536.77; district funds, $2,862.57. This section of the road was graded over Deadwood Mountain by the forest service.

Indian Creek Market Road No. 45

Surfacing 2.5 miles from Mile 6.5 to Mile 9.0; surfaced with crushed rock, 8 feet wide, 8 inches deep. Work by county forces; begun May, 1929; completed September, 1929. Total cost, $6,215.41; market road funds, $5,353.06; district funds, $862.35.

North Fork Market Road No. 47

Meadows Bridge-McLeod Bridge Section, 2.31 miles grade and surface, Sta. 275 at Meadows Bridge to Sta. 397 at McLeod Bridge. Roadbed 20 feet wide, surfacing 10 feet wide, 4 inches deep, base only. Work by county forces; begun March, 1929; completed December, 1929. Total cost, $25,510.58; market road funds, $15,000; O. & C. funds, $10,510.58.

Mapleton Hill Section, 3.86 miles base surfacing with crushed rock, Sta. 0 at Highway to Sta. 204 west side of mountain. Base rock surface, 8 feet wide, 4 to 6 inches deep. Work by county forces; begun May, 1929; completed December, 1929. Total cost, $12,130.83, O. & C. funds. The base surfacing on this section and the grading and base surfacing on the Meadows Bridge-McLeod Bridge section, permitted winter travel by road from the Willamette Valley to Florence for the first time. This section was graded by the Forest service.

Meadows Bridge-Main River Road Section, 6.2 miles grade widening and surfacing, Sta. 397 at Meadows Bridge to Sta. 601 at Siuslaw Highway. Roadbed widened to 20 feet, surface crushed rock top 1-inch minus, 12 feet wide, 4 inches deep. Work begun June, 1930; completed September, 1930. Grade widening by Yunker-Wiecks, contractors; surfacing by county forces. Total cost, $25,667.95; O. & C. funds, $25,664.55; general funds, $3.40. The Roosevelt Coast Highway in the vicinity of Florence being under construction and rapidly nearing completion and the completion of the Siuslaw Highway requiring three or four years it was deemed necessary to widen the old grade constructed by the Forest Service and to place a top surface on the base course constructed by county forces in 1929. This work gives traffic a good surface and grade to travel over while the Siuslaw Highway is under construction.

During 1929, several short sections were resurfaced between Meadows Bridge and Florence by county forces. Cost, $3,376.35.

River Road Market Road No. 48

Lancaster, north section, 2.8 miles grade and surface, Sta. 0, north of Junction City, to Sta. 146+64 near Benton County line. Roadbed width, 26 feet; surfacing, 12 feet wide, 8 inches deep. Work by county forces; begun April, 1930; incomplete to November 1, 1930. Expended to November 1, 1930, $4,625.56.

Glenada-Ada Market Road No. 49

Austen's-Fiddle Creek Hill Section, 2.35 miles grading and 76 feet pile trestle, Sta. 47 at Austen's to Sta. 171 at Fiddle Creek Hill. Roadbed 20 feet wide. Work done by county forces; begun February, 1929; completed October, 1929. Total cost, $13,300.39; market road funds, $10,056.26; district funds, $3,244.13.

During 1929, on the Fiddle Creek Hill section and in the vicinity of Canary, slides were removed and some surfacing material placed by county forces. Cost, $3,205.23, district funds.

Austen's-Ada Section, 4.85 miles gravel surfacing, Sta. 47 at Austen's to Sta. 303, near Ada. Surfacing 10 feet wide, 4 inches deep. Work by county forces; begun May, 1930; completed September, 1930. Total cost, $12,207.53; market road funds, $10,611.66; district funds, $1,595.87. The completion of this section leaves approximately 2½ miles on this road to connect with the Roosevelt Highway. Surveys have been made and the road will probably cross two arms of Woahink Lake on long trestle bridges through a heavily wooded country of much natural beauty. The people in this vicinity will welcome the completion of this section in 1931 and 1932, enabling them to travel to Eugene by car the entire year.

LINCOLN COUNTY

Beginning with the year 1920 a total of $295,053.39 has been made available for market roads in Lincoln County, of which $127,131.93 was from the state market road appropriation, $133,393.82 from county market road levies, and approximately $34,527.64 from county cooperative funds, such as bonds, special district levies, general road funds, motor license funds, etc. Of this amount, $282,734.47 has been expended and the following work accomplished: 37.15 miles graded; 35.89 miles surfaced; 5 miles resurfaced, and maintenance during the last six years costing $14,113.33.

During the past two years, $49,646.81 has been expended and the following accomplished: 6.69 miles graded; 14.52 miles surfaced; 5 miles resurfaced; and an average of 35.5 miles maintained.

Good progress was made on the market road system in Lincoln County during the last two years. Some resurfacing gravel was placed on the Salmon River Market Road No. 1, between Rose Lodge and Otis, approximately 5 miles was graded and surfaced on the Yaquina River Market Road between Eddyville and the Benton County line. On the Spout Creek Market Road from Burnt Woods south, 2 miles were graded and county forces widened the existing grade and slopes on approximately 5 miles of work previously graded; in addition this road is under contract for crushed rock surfacing and the base course is practically completed for 6 miles.

On the Siletz Road, between the towns of Siletz and Taft, the work is being pushed rapidly forward. Approximately 3.6 miles have been graded in the past two years and gravel surfacing placed for 3 miles. The work on the Siletz Road the last two years has been performed on the section not now on the market road system; this section will probably be placed on the system in the future and the State Market Road Department has assisted in the inspection of construction. The completion of this road will require three or four years, it is expected, but when completed will open up a farming community and recreation area now served only by boat.

STATUS OF MARKET ROAD SYSTEM AS OF NOVEMBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement	
		Surfaced With Rock or Gravel	Not Graded to Market Road Standards
1. Salmon River	8.0	8.0	......
2. Siletz River	16.0	16.0	......
3. Yaquina River	12.8	6.3	6.5
4. Spout Creek	8.0	8.0	......
Total in miles	44.8	38.3	6.5

The engineering and construction during the past two years has been handled by H. M. Teel, County Engineer, under the direction of County Judge F. M. Robison and Commissioners Jay Dunn and Andrew Kent.

Salmon River, Market Road No. 1

Rose Lodge-Otis Section, approximately 5 miles, crushed gravel resurfacing at various places where the road began to wear badly. Work by county and district forces; begun November, 1929; completed December, 1929. Cost, $1,390.79, road district funds.

Siletz River Market Road No. 2

During the past two years a section from Reed Creek school to Skunk Creek, a distance of 3.6 miles, was graded in two units by contract and a section, approximately 3 miles in length, was surfaced with screened gravel. Funds for this work were provided by special district levies and general road funds. This work has not been completed to November 1, 1930.

The total estimated cost and the expenditures to date were not supplied by Lincoln County. This section is beyond the limits of the present market road designation.

Dundon Bridge-Siletz Section, approximately 8 miles, and Siletz-Cedar Creek Section, approximately 6 miles, placing screened gravel resurface as patch work on existing surfacing. Work by county forces. Work commenced September, 1930; not completed November 1, 1930. Total estimated cost, $2,625.

Yaquina River Market Road No. 3

Damon-Waggoner Section, 3.84 miles grading, Sta. 101+50 to Sta. 303+10; roadbed width, 16 feet. Work by Yunker-Wiecks, contractors; begun December 1, 1928; completed September 30, 1929. Total cost, $21,001.26; market road funds, $11,035.63; general fund, $3,500; district funds, $6,465.63. The Southern Pacific Railroad Company has participated in the cost of this section to the extent of $6,590.49, due to the fact that five grade crossings were eliminated by this construction. This sum of money was credited to the market road fund.

Nashville-Benton County line Section, grading 0.85 mile, Sta. 643+80 to Sta. 668+01; roadbed width, 16 feet. D. L. Ashton, contractor; work begun August 1, 1929; completed September 1, 1929. Total cost, $1-168.50; market road funds, $1,118.50; general funds, $50.

Nashville-Benton County line Section, 0.85 mile surfacing with gravel, Sta. 643+80 to Sta. 688+01; surfacing width, 14 feet; depth, 8 inches. East Side Sand and Gravel Company, contractors; work begun September 16, 1930; completed September 30, 1930. Total cost, $2,888.64.

Eddyville-Waggoner Section, 5.7 miles crushed gravel surfacing; Sta. 0 at Corvallis-Newport Highway near Eddyville to Sta. 303 at Waggoner's. Surfacing width, 8 feet; depth, 6 inches. Work by Corvallis Sand and Gravel Company, contractors. Work begun October 1, 1930; not completed November 1, 1930. Expended to November 1, 1930, $3,-514.49; market road funds, $3,434.89; general fund, $79.60. Total estimated cost of the project, $13,850.

Harden Creek Bridge, 53 feet of standard wood trestle, 18 feet wide, at Sta. 524+27 to Sta. 524+80. Work by county forces; commenced June 10, 1930; completed June 25, 1930. Total cost, $631.85.

Damon-Waggoner Section, two steel bridges, one at Sta. 127+27 to Sta. 128+33; a 50-foot steel span with trestle approaches. One at Sta. 264+36 to Sta. 265+02; a 70-foot steel span with trestle approaches; width of both structures, 18 feet. Both bridges over Yaquina River. Contractors, Hamar and Curry; work begun April 20, 1929; completed August 25, 1929. Total cost, $12,000.57.

Spout Creek Market Road No. 4

Harlan Section, grading 2 miles, Sta. 312+00 to Sta. 416+50 at Harlan; grading width, 12 feet. Work by Yunker-Wiecks, contractors; begun August 15, 1929; completed November 20, 1929. Total cost, $4,368.20.

Burnt Woods-Harlan Section, 4 timber bridges over small streams, standard timber trestles 18 feet wide; total length, 167 lineal feet. Work by J. V. Curry, contractor; work begun May 15, 1930; completed August 25, 1930. Total cost, $2,319.64.

Burnt Woods-Harlan Section, 1.5 miles south of Burnt Woods, Sta. 65 to Sta. 68, 3x3 cedar box culvert and 300 feet of new grade 16 feet wide, eliminating an old wooden trestle. Work by county forces; work begun May 10, 1930; completed July 25, 1930. Total cost, $547.07.

Burnt Woods-Harlan Section, 8 miles of crushed rock surfacing, Sta. 0 at Burnt Woods to Sta. 416+50 at Harlan. Surfacing width, 8 feet; depth, 8 inches. Work by J. H. Gallagher, contractor; work begun September 1, 1930; not completed to November 1, 1930. Base course has been completed from Sta. 25 to Sta. 416+50. Cost to November 1, 1930, $4,634.46, market road fund. Total estimated cost, $13,200. The grading and surfacing of this road will be a welcome improvement to the people in this vicinity, as the old road was impassable during the winter months.

LINN COUNTY

Beginning with the year 1920 a total of $1,031,184.30 has been made available for market roads in Linn County, of which $499,278.30 was from the state market road appropriation, $468,204.90 from county market road levies and approximately $63,701.10 from county cooperative funds, such as bonds, special district levies, general road funds, motor license funds, etc. Of this amount $1,038,281.62 has been expended and the following work accomplished: 176.14 miles graded; 176.14 miles surfaced; 9.7 miles resurfaced; 24.2 miles oiled, surface treatment; and maintenance during the last six years costing $55,088.72; cooperation on state highways, to the amount of $52,350.

During the past two years, $194,209.51 has been expended and the following accomplished: 27.78 miles graded; 32.24 miles surfaced; 9.7 miles resurfaced; 24.2 miles oiled, surface treatment, heavy oil; and an average of 250 miles maintained.

STATUS OF MARKET ROAD SYSTEM AS OF NOVEMBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement		
		Heavy Oil Surface Treatment	Rock or Gravel Surfacing	Not Graded to Market Road Standards
1. Albany-Corvallis	9.4	3.0	6.4	....
2. Corvallis, South	27.0	.3	26.7	....
3. Halsey-Sweet Home	26.8	5.5	21.3	....
4. Green's Bridge-Scio-Lyons	21.3	6.5	14.8	....
5. Munkers-Stayton-Weasel Flat	16.0	....	16.0	....
6. Mehama-Mill City	8.9	8.9	....	....
7. Knox Butte-Scio	15.7	....	15.7	....
8. Santiam-Bottoms	2.6	....	2.6	....
9. Albany-Spicer	9.3	....	9.3	....
10. Lebanon-Sand Ridge	7.8	....	7.8	....
11. Brownsville-Orleans	20.1	....	20.1	....
12. Bell Plain-Verdure	6.4	....	6.4	....
13. Fayelleville-Boston Mill, North	13.8	....	13.8	....
14. Harrisburg-Diamond Hill	7.8	....	7.8	....
15. Diamond Hill, South	4.4	....	4.4	....
16. Alford, South	7.6	....	7.6	....
17. Brush Creek	6.4	....	4.0	2.4
18. Lebanon-Rock Hill	8.5	....	8.5	....
19. Plainview, East and West	5.2	....	5.2	....
20. Lacomb-Brewster-Berlin	19.7	....	19.7	....
21. Plainview, South	3.8	....	3.8	....
22. Tangent-Lebanon	9.7	....	9.7	....
23. Lake Creek School-Brownsville	10.5	....	10.5	....
24. Crabtree-Brewster	6.2	....	6.2	....
25. Arnold School-Crabtree	8.1	....	8.1	....
26. Linn, West	4.4	....	4.4	....
27. Glasser-Fleinow School	5.9	....	5.9	....
28. Gilkey-West Scio	1.0	....	1.0	....
29. Brandon School	2.9	....	2.9	....
30. Santiam Highway	....	....	....	....
Totals in miles	297.2	24.2	270.6	2.4

Linn County has a total of nearly 300 miles in the market road system; practically all of this mileage was graveled or macadamized by district or bond funds on existing county roads several years ago; the surfacing was placed on the roads just as they were, with little or no attention given to grades or alignment. The surfacing in many places has worn out and the market road system was laid out to cover the important and heavily traveled roads, so that they could be reconstructed on good grades, with proper alignment, new surfacing, substantial bridges and adequate maintenance. During the past two years satisfactory progress was made and several sections of very poor road was brought up to a good standard.

During the past two years Linn County oiled approximately 24 miles on the market road system and purchased an oiler for the purpose of continuing to oil those roads on the system that are in condition to carry an oil surface.

Linn County has a very good maintenance organization and the roads are generally well maintained.

The engineering and supervision of work has been handled by Chas. H. Leonard, County Engineer, under the direction of County Judge B. M. Payne, and Commissioners H. A. Renninger and H. F. Warner.

Albany-Corvallis Market Road No. 1

Corvallis-East Section, 1 mile graded and surfaced, Sta. 0 at Oregon Electric depot to Sta. 52, at north end of Market Road No. 2. Roadbed width, 24 feet; base surface, 20 feet, 6 inches deep; gravel treated with light oil. Concrete riprap protection for fills. Work by county forces; begun April, 1928; completed December, 1928. Total cost, $10,729.57. Expended 1928, $9,810.04; expended 1929, $919.53.

Owl Creek Section, 1.5 miles, grading, surfacing and timber bridges, Sta. 53 at north end of Market Road No. 2 to Sta. 127 east of Owl Creek. Roadbed width, 24 feet; surfacing, 20 feet wide; depth, 6 to 10 inches; five 19-foot timber spans; 18-foot roadway. Grading and bridges by county forces; surfacing by Frank M. Bullis, contractor. Work begun March, 1929; completed June, 1929. Total cost, $7,607.53; market road fund, $6,660.96; bridge fund, $946.57.

Corvallis-East Section, 1 mile oiling and screenings, Sta. 0 at Oregon Electric depot to Sta. 52 at north end of Market Road No. 2. Oiled width, 20 feet. Work by county forces; begun July, 1929; completed August, 1929. Total cost, $2,513.47.

Corvallis-Owl Creek Section, 2.5 miles; 1 mile reoiling and repairing riprap; also constructing concrete surface and spillway for flood water. One and one-half miles new oil and screenings, Sta. 0 at Oregon Electric depot to Sta. 127, east of Owl Creek. Roadbed oiled 18 feet wide, with 95 per cent asphaltic oil. Work by county forces; begun March, 1930; completed August, 1930. Total cost, $4,536.80.

Corvallis, South Market Road No. 2

Knighton Section, 0.46 mile grading, surfacing and bridges, Sta. 690 to Sta. 714+31; roadbed width, 24 feet; surfacing width, 18 feet; depth, 8 inches; bridges 18 feet wide. Work by county forces; begun August, 1929; completed September, 1929. Total cost, $2,477.85; general fund, $500; district funds, $1,522.10; bridge fund, $455.75.

Corvallis, South Section, 2.55 miles; 2.3 miles grading and surfacing, 0.25 mile oiling, Sta. 0 at Market Road No. 1 to Sta. 136. Roadbed width grading, 30 feet; surfacing 18 feet wide, 6 to 8 inches deep; oiling width, 18 feet, with 95 per cent asphaltic oil. Work by county forces; begun May, 1930; completed September, 1930. Total cost, grading and surfacing, $9,372.50; oiling, $106.60.

Halsey-Sweet Home Market Road No. 3

Sweet Home-South Section, 2.96 miles, grade and surface, Sta. 0 at Sweet Home, south to Sta. 236+45 near Matlock place. Roadbed width, 24 feet; surface, 18 feet wide, 6 inches deep, crushed gravel. Work by county forces; begun June, 1928; completed October, 1929. Total cost, $36,880.96. Expended 1928, $23,843.31; in 1929, $13,037.65.

Muddy Creek Section, 1.06 miles, grading, surfacing and timber bridges; Sta. 145 east of Muddy Creek to Sta. 201 west of Muddy Creek. Roadbed width, 24 feet; surfacing, 18 feet wide, 6 inches deep; bridges, 18 feet wide. Work by Fred H. Slate, contractor; work begun July, 1929; completed September, 1929. Total cost, $6,758.18; market road fund, $4,791.02; bridge fund, $1,967.16.

Cummings Section, 0.15 mile, grading, surfacing and 114 feet timber trestle; 5 miles west of Halsey. Roadbed width, 24 feet; surfacing, 18 feet wide, 6 inches deep; bridge, 18 feet wide; work by county forces; begun February, 1929; completed September, 1929. Total cost, $2,432.63; market road funds, $1,852.78; bridge fund, $579.85.

McKircher Bridge Section over Calapooia River, 0.95 mile, grading, surfacing, and one 105-foot covered Howe truss with three 19-foot trestle approaches, Sta. 500 to Sta. 550. Roadbed width, 24 feet; surfacing, 18 feet wide, 8 inches deep; bridge, 18 feet wide. Work by county forces; begun May, 1929. Cost to November 1, 1930, $7,361.55; district funds, $1,468.45; bridge funds, $5,893.10. It is expected that this section will be completed in 1931.

Brownsville-Halsey Section, 5.5 miles oiling and 1,000 feet of grading, surfacing, and construction of 57 feet of pile trestle. Grading and surfacing Sta. 226 to Sta. 236. Roadbed width, 30 feet; surfacing, 20 feet wide, 8 inches deep; bridge, 20 feet wide; oiling 18 feet wide, with 95 per cent asphaltic oil. Work by county forces; begun May, 1930; incomplete November 1, 1930. Cost to November 1, 1930, $7,815.60; market road funds, $7,215.60; bridge funds, $600.

Green's Bridge-Scio-Lyons Market Road No. 4

Green's Bridge-Munkers-Scio Section, 3 miles oiling and reoiling with 95 per cent asphaltic oil. Roadbed oiled 18 feet wide. Work by county forces; 1929 work begun in May; completed in August. Total cost, $4.789.48. Reoiling in 1930 commenced August; completed in September. Total cost, $1,783.73.

Weasel Flat School-Lyons Section, 2.75 miles, grading, surfacing and trestle bridges, Sta. 625, south of Weasel Flat School to Sta. 770 at Lyons. Roadbed width, 24 feet; surfacing, 18 feet wide, 8 inches deep; bridges, 18 feet wide. Work by county forces; begun April, 1929; incomplete November 1, 1930. Cost to November 1, 1930, $23,041.73.

Jordan-Weasel Flat School Section, 3.20 miles, grading, surfacing and trestle bridges, Sta. 456, south of Jordan Creek, to Sta. 625, south of Weasel Flat School. Roadbed width, 26 feet to 30 feet; surfacing, 18 feet wide, 8 inches deep; bridges, 20 feet wide. Work by county forces; begun February, 1930; incomplete November 1, 1930. Cost to November 1, 1930, $23,420.23. Surfacing on this section was placed on one side of the road 10 feet wide to carry traffic during the winter of 1930-1931. It is expected that the surface will be completed in 1931.

Munkers-Stayton-Weasel Flat Market Road No. 5

Shelburn-Stayton Section, 3.23 miles grade and base surface from Sta. 0 one-quarter mile east of Shelburn, east and north to Sta. 170+49. Roadbed width, 24 feet; surface, 18 feet wide, 5 inches deep, gravel. Work by county forces; begun June, 1928; completed October, 1929. Total cost, $10,275. Expended in 1928, $6,446.61; expended in 1929, $3,828.39.

Mt. Pleasant Section, 1.05 miles grade and surface, Sta. 540 to Sta. 595+52 near Mt. Pleasant school. Roadbed width, 26 feet; surfacing, one-half of road, 9 feet wide, 6 inches deep. Work by county forces; begun March 15, 1930; completed September, 1930. Total cost, $3,702.33.

Mehama-Mill City Market Road No. 6

Mehama Bridge over North Santiam River between Lyons and Mehama. Redecking and painting span and approaches. Total cost, $1,530.94.

Knox Butte-Scio Market Road No. 7

Knox Butte Section, oiling from Pacific Highway to railroad crossing at Knox Butte, 2.6 miles. Holt section, rebuilding bridges at Mile 8.6, 8.7, 8.9 and 9.2; timber trestles, total length 92 feet, 20 feet wide. Work by county forces; begun January, 1930; completed June, 1930. Total cost, $1,189.74.

Bell Plain-Verdure Market Road No. 12

Oakville section and Muddy Creek bridge, 0.5 mile, grade, base surface and bridge, Sta. 270 to Sta. 303. Roadbed width, 26 feet; surfacing, 18 feet wide, 8 inches deep. Bridge, 16-19-foot spans timber trestle, 18 feet wide. Work by county forces; begun February 15, 1930; completed September 15, 1930. Total cost, $5,798.67.

Fayetteville-Boston Mill, North Market Road No. 13

Muddy Creek bridges, west of Fayetteville; also filling approaches and surfacing with gravel.

Timber trestle bridges over Muddy Creek and several sloughs; grading approaches and placing gravel on several short sections 50 feet to 100 feet in length. Work by county forces; begun in May, 1929; completed October, 1929. Total cost, $3,378.08; district funds, $550; bridge funds, $2,888.08

Harrisburg-Diamond Hill Market Road No. 14

Blue Stickey Section, 3.6 miles grade, bridges and surfacing, Sta. 222, at center of section 8, to Sta. 412 at junction with Market Road No. 15. Roadbed width, 24 feet; surfacing, 18 feet wide, 8 inches deep. 99 feet of timber bridges, 18 feet wide. Work by county forces; begun July 1, 1929; completed August 15, 1930. Total cost, $12,755.51; market road funds, $11,984.15; bridge funds, $771.36.

Diamond Hill South Market Road No. 15

Entire market road 4.4 miles in length resurfaced with crushed rock 16 feet wide, 2 inches deep. Work by county forces; begun August 1, 1930; completed August 15, 1930. Total cost, $1,771.91.

Lacomb-Brewster-Berlin Market Road No. 20

Salt Lake Section, 2.7 miles, grading and surfacing, Sta. 145, 3 miles west of Lacomb to Sta. 287, 1¼ miles east of Brewster. Roadbed width, 24 feet; surfacing, 18 feet wide, 8 inches deep. Work by county forces; begun May, 1929; completed September, 1929. Total cost, $14,225.63.

Lebanon Section, 2.6 miles, grading and surfacing, Sta. 0 at east city limits of Lebanon, south and east toward Berlin to Sta. 138. Roadbed width, 24 feet; surfacing, 18 feet wide, 8 inches deep. Work by county forces; begun July, 1929; completed December, 1929. Total cost, $19,731.74.

Lebanon Dam-Berlin Section, 3.76 miles, grading and base course surfacing, Sta. 138 at Lebanon Dam to Sta. 262+50 and Sta. 425 to Sta. 499+20 at Berlin. Roadbed width, 26 feet; surfacing, 18 feet wide, 8 inches deep, crushed gravel. Work by county forces; begun February 15, 1930; incomplete November 1, 1930. Expended to November 1, 1930, $18,822.10. Total estimated cost, $25,958.40, to be completed in 1931.

Lacomb and Lebanon Sections, 5.3 miles, maintenance materials and patching surfacing. Work by county forces; begun January, 1930; completed September, 1930. Total cost, $2,600.48.

Lacomb-Salt Lake Section, survey, Sta. 0 to Sta. 145. Expended to November 1, 1930, $156.35.

MALHEUR COUNTY

Since the beginning of 1920, a total of $427,048.98 has been made available for market roads in Malheur County, of which $222,712.99 was from the state market road appropriation, $200,900.60 from county market road levies, and approximately $3,435.39 from other local sources such as bonds, general road fund, etc. Of this total, $410,538.57 has been expended and the following work accomplished: 64.70 miles graded; 29.70 miles surfaced; oil mix macadam, 11.28 miles; maintenance during the last six years costing $24,522.92 and cooperation on state highway construction to the extent of $64,143.

During the last two-year period $76,907.62 has been spent and the following accomplished: 20.62 miles graded; 11.70 miles surfaced; maintenance, $7,506.57.

STATUS OF MARKET ROAD SYSTEM, AS OF NOVEMBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement			
		Oil Mix Macadam	Surfaced with Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Nyssa-Jordan Valley	74.58	11.28	20.00	5.00	38.30
2. Juntura-Drewsey-Burns Highway	....	....	....	....	....
3. Homedale Spur	1.95	....	1.95	....	....
4. Vale-Ontario (Hwy)	....	....	....	....	....
5. Cow Valley (John Day Highway)	....	....	....	....	....
6. Payette Spur	....	....	....	....	....
7. Weiser Spur	....	....	....	....	....
8. Harper-Westfall	12.81	....	2.00	10.81	....
9. Little Valley	1.00	....	....	0.30	0.70
10. Adrian-Parma	2.75	....	2.75	....	....
11. Adrian-Arena Valley	3.22	....	2.00	1.22	....
12. Adrian-Caldwell	4.39	....	1.00	3.39	....
13. Juntura-Beulah	21.20	....	....	3.00	18.20
Total miles	121.90	11.28	29.79	23.72	57.20

Until 1926, practically all of Malheur County's market road fund was spent on the Jordan Valley Market Road, including a $100,000 county bond issue and other county funds. Subsequent to 1926, much of the market road fund was used to cooperate on state highway projects until 1929. South of Adrian, there is little valuation until Jordan Valley is reached and owing to low prices for stock and other products, there is little produced in the way of taxes. Considering this feature and the fact that there has been so much money spent, it has been considered desirable to cut down standards and keep a maintenance crew on the project and build up and surface with local materials and occasionally put on a necessary project. In this manner, a fairly good road is being obtained. The Owyhee project will soon be completed and roads through the project will be imperative.

Nearly all work has been done by county forces. The County Court has purchased two tractor and blade outfits and other equipment and are building suitable roads quite cheaply. Surfacing material is all pit run or bank run and while frequent deposits of material occur, much better results would be obtained if the materials were crushed. Lack of funds and a large mileage of roads seriously hampers the County Court in obtaining proper equipment and getting necessary work done.

The work has all been handled by the County Court, H. Lee Noe, Judge, and Frank T. Morgan and J. D. Fairman, Commissioners. J. Edwin Johnson is County Engineer and Roadmaster.

Nyssa-Jordan Valley Market Road No. 1

During the two-year period, the principal project has been surfacing and oiling the Nyssa-Adrian to Snake River Bridge section. Other work has been small surfacing projects and maintenance, a total of $12,883.80.

In 1929, a contract was let to Henry Fields for surfacing with pit run gravel from Sta. 421 to Sta. 642=3295+87 at Adrian, to Sta. 3287+60 at Big Bend Bridge. Total cost, $4,539.74.

In 1930, the section from Nyssa at Sta. 0+00 to Adrian at Sta. 642=3295+87 to Sta. 3268 at Big Bend Bridge was set up with additional filler and additional gravel where needed and then oiled, using the turn over or road mix method, using 60-70 per cent oil. The cost was rather high on account of adding so much filler and other material and on account of large gravel having to oil to a depth of 2½ or 3 inches in places instead of 2 inches. However, an unusually fine job was obtained. Frank Hurt was superintendent on this project. A distributor and boiler were rented from the State Highway Department and the county tractors and blades used.

All other towns or communities are served with an oiled state highway and by the county's oiling this road, this section has the same facilities. It is not intended that any other roads shall be oiled. Cost was $17,574.45 or $1,488 per mile. The section at the Owyhee bridge was only given a surface treatment as it is hoped that a new bridge can be put in on a new location in the near future. From Sta. 3287+60 to the Snake River Bridge over Market Road No. 10, 800 feet in length, was oiled as a part of this project and the cost included as it was not possible to segregate costs. In 1930, $5,823.61 was spent in maintenance and adding surfacing materials, etc.

Homedale Spur Market Road No. 3

This project from Sta. 102+88 at the Homedale Junction on the Nyssa-Jordan Valley Market Road, extends easterly to the Oregon-Idaho State line and was graded by county forces in 1925. In 1925, the Commercial Club of Caldwell, Idaho, and other Idaho organiaztions and individuals raised funds and let a contract for surfacing with screened gravel the entire section and about 1,500 feet on the Nyssa-Jordan Valley Road. Surfacing was placed 9 feet wide. This was done to provide a surfaced road from the junction to Idaho towns to get the Jordan Valley trade. As this was a donated project, there is no record of cost.

Harper-Westfall Market Road No. 8

This road was designated, surveyed and graded in 1929 from Sta. 0+00 at the Harper Junction on the Central Oregon Highway to Sta. 676+71 at Westfall. The total expenditure on the project was $6,421.21, $1,950.90 being for three small bridges and redecking the Malheur River Bridge at Harper and $3,470.31 for grading. The road was graded with a 20-foot crown and built in an entirely new location. The work was done with a tractor and blade with some borrow and drifting but the soil was a very light ash and grading could not be completed. Rains and travel have now compacted the road and grading will be completed in 1931. The road is of a light standard as travel will always be light.

In 1930, a contract was awarded to C. H. Blackburn for placing 770 cubic yards of screened gravel from the highway through the town of Harper, for 65 cents per cubic yard or $490.50. Previous to placing the gravel, the roadbed was raised and widened by force account at a cost of $400. A contract is let at this time for surfacing from Harper across the flat to the hills. County forces are hauling shale from a pit about four miles from Harper and patching out the dust pockets from Harper to Westfall. About $1,000 will be spent on these last two projects.

Little Valley Market Road No. 9

Opening up of the irrigation project between Harper and Vale made access to the shipping point on the railroad so in 1929 the Little Valley Market Road, extending from the highway across the Malheur River to the railroad, was designated.

A contract to move the span which was abandoned when the highway was relocated at the Burrell ranch was let to A. G. Plant & Co., August 10, 1929, and completed October 10, 1929, at a cost of $7,176.97. Grading approaches contract was let to C. H. Blackburn for $30,900. County forces partially graded the road to the highway with a tractor and blade outfit for $200. No work was done in 1930 except for putting in culverts at a cost of $68.90 and a maintenance expenditure of $68.90.

Adrian-Parma Market Road No. 10

This is one of a group of three roads designated in 1929 to serve the Big Bend area, which is a highly developed irrigated section of Oregon, lying east of the Snake River. Sta. 0+00 is on the Nyssa-Jordan Valley Market Road just south of Adrian and the terminus at Sta. 145+57 at the Idaho State line. In addition to serving Oregon lands, this connects with Idaho roads and a considerable amount of Idaho products come to warehouses at Adrian. The road was graded with tractor and blade and surfaced with pit run gravel 9 feet wide by 3 inches deep for $1,037.51.

Adrian-Arena Valley Market Road No. 11

Big Bend Group. Sta. 0+00 on Adrian-Caldwell Market Road No. 12 to Idaho State line at Sta. 170. Graded with tractor and blade and partially surfaced with pit run gravel in 1929. Cost, $1,411.97.

Adrian-Caldwell Market Road No. 12

Big Bend Group. Sta. 0+00 on Adrian-Parma Market Road No. 10 to Sta. 231+80.7 on the Idaho State line, graded with tractor and blade and partially surfaced with pit run gravel in 1929. Cost, $1,958.44, of which $473.23 was for small bridges.

Beulah-Juntura Market Road No. 13

Designated in 1929 and partially graded Mile Post 1 to Mile Post 4 and Mile Post 5 to Mile Post 7, north from Juntura. Work consisted principally of widening on side hill sections along the river. While the work owing to shortage of funds was only partly done it made a vast improvement. The work was done in 1930 and cost $1,916.89.

MARION COUNTY

Beginning with the year 1920, a total of $2,666,333.67 has been made available for market roads in Marion County, of which $711,873.09 was from the state market road appropriation, $770,904.94 from county market road levies and approximately $1,183,555.64 from county cooperative funds, such as bonds, special district levies, general road funds, motor license funds, etc. Of this amount, $2,653,699.70 has been expended and the following work accomplished: 271.62 miles graded; 194.14 miles surfaced; 107.70 miles paved; and major bridges costing $109,160.08; also maintenance during the last six years costing $115,138.18.

During the past two years, $684,331.53 has been expended and the following work accomplished: 83.08 miles graded; 83.08 miles surfaced; 16.37 miles paved, and major bridges costing $39,463.08, and an average of 297 miles maintained.

Marion County during the years previous to 1929, practically completed the market road system which had been designated. In 1929 an additional program was projected and 27 new market roads were added to the system. These new market roads have a total of approximately 163 miles. During this biennium, approximately one-half of this total was graded and surfaced and the unfinished roads will probably be graded and surfaced and in some instances paved during the next two years. The market road system now comprises 442.15 miles, of which 175.98 is pavement; 182.46 miles macadam and 83.71 miles not graded.

The county continues a paving program and each year adds additional mileage of completed pavement.

An asphaltic concrete pavement is laid 16 feet wide, 4 inches thick, curves superelevated.

During the past two years, a number of curves were repaved on better alignment and a number of places where half width pavement existed were paved full width.

During the last two years, a number of bridges of importance were constructed, notably between Turner and Marion and Turner and Aumsville, where one 90-foot concrete bridge, one 75-foot concrete bridge and four 60-foot concrete bridges all over Mill Creek. East of Salem two bridges were constructed, one 104-foot concrete and one 50-foot concrete. At Hazel Green over Little Pudding River one 100-foot concrete bridge was constructed. Over Pudding River east of Woodburn a 120-foot steel span known as the Killin Bridge was constructed. Over Drift Creek south of Silverton, one 88-foot concrete span was built. Across Lake Labish, east of Brooks, 1,558 lineal feet of cedar pile trestle was constructed, and a number of reinforced box culverts were constructed, eliminating old wooden bridges.

Marion County has purchased considerable equipment for use in maintenance and the roads are well maintained at an average cost of less than $100 per mile.

Engineering has been under the direction of W. J. Culver who died in August, 1929. Since that date H. S. Swart has been County Engineer, with J. F. McGee and F. F. Ford principal assistants.

[MARION]

Frank Johnson, formerly assistant roadmaster, has been roadmaster since August, 1929. All work has been under the direction of County Judge J. C. Siegmund and Commissioners J. E. Smith and J. H. Porter.

STATUS OF MARKET ROAD SYSTEM AS OF NOVEMBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement		
		Paved With Bituminous Pavement	Surfaced With Rock or Gravel	Not Graded to Market Road Standards
1. Jefferson-Greens Bridge	2.36	2.36	....	....
2. Sidney	3.28	2.28	....	1.00
3. Turner-Marion	7.29	4.02	3.27	....
4. Brooks-Labish (Brooks to Pacific Highway)	.30	.30	....	....
5. Cemetery Road (Gervais to Pacific Highway)	.50	.50	....	....
6. Matheny Ferry Road	3.35	3.35	....	....
7. Gervais-St. Louis	3.59	1.89	1.70	....
8. Hubbard-Broadacres-Champoeg	9.33	2.83	....	6.50
9. Hubbard-Needy	2.50	2.50	....	....
10. Aurora-Donald	4.75	4.75	....	....
11. Aurora-Butteville	3.25	....	3.25	....
12. Yergen Corners-Newberg	4.89	....	4.89	....
13. St. Paul-Newberg	6.12	6.12	....	....
14. Woodburn-St. Paul	9.80	9.80	....	....
15. Monitor-Woodburn	2.10	2.10	....	....
16. Mt. Angel-Woodburn	6.44	6.44	....	....
17. Mt. Angel-Scotts Mills	6.47	6.47	....	....
18. Mt. Angel-Bethany	3.65	3.65	....	....
19. Salem-Livesley	2.90	2.90	....	....
20. Liberty-Rosedale	3.94	3.94	....	....
21. Salem-Pratum	6.67	6.67	....	....
22. Salem-Gear-East	9.40	4.50	.40	4.50
23. Salem Whittaker	11.30	11.30	....	....
24. Salem-Wheatland	12.47	6.47	....	6.00
25. Feeble-Minded Institute Road	5.59	2.09	....	3.50
26. Salem-Silverton	12.44	12.44	....	....
27. Salem-Turner	7.90	7.90	....	....
28. Turner-Aumsville	4.20	4.20	....	....
29. Aumsville-Sublimity	4.10	4.10	....	....
30. Sublimity-Stayton	1.50	1.50	....	....
31. Stayton-Mehama	8.64	8.64	....	....
32. Stayton-West Stayton	3.20	3.20	....	....
33. Silverton-Pine Tree Corners	4.34	4.34	....	....
34. Silverton-Willard	4.39	2.16	2.23	....
35. Jefferson-Marion	4.49	....	4.49	....
36. Salem-St. Paul (via Fairfield)	15.60	7.72	7.88	....
37. Pacific Highway (at Brooks) to Labish	4.69	1.14	3.55	....
38. Woodburn south to Pacific Highway	1.47	1.47	....	....
39. Jefferson-Talbot-Ferry	8.00	....	5.50	2.50
40. West Stayton-Aumsville	4.37	....	4.37	....
41. Turner-Pacific Highway (via Cloverdale)	4.92	....	4.92	....
42. Sublimity-Willard	8.08	5.25	2.83	....
43. Whittaker-Drift Creek-Silver Falls City	11.61	1.77	7.84	2.00
44. Pratum-Willard	4.32	....	4.32	....
45. Silverton-Hadleys Ranch-Hult	13.10	1.00	8.10	4.00
46. Silverton-Skaifes Ranch-Drift Creek	8.06	....	2.56	5.50
47. Silverton-Central Howell	4.07	4.07	....	....
48. Pine Tree Corners-Jacks Bridge	.53	....	.53	....
49. Mt. Angel-North Howell	3.76	....	3.76	....
50. North Howell-Lake Labish	1.04	....	1.04	....
51. Gervais-Simmons Church-Macleay	14.95	....	11.45	3.50
52. Chemawa-Hazel Green and East	5.90	....	3.15	2.75
53. Livesley-Halls Ferry-Independence	6.91	....	6.91	....
54. Rosedale-Fairview-Buena Vista	9.24	....	9.24	....
55. Liberty-Skyline Road	1.60	1.60	....	....
56. Industrial Schools Road	3.00	3.00	....	....

STATUS OF MARKET ROAD SYSTEM—Continued

Number and Name	Length in Miles	Classification as to Improvement		
		Paved With Bituminous Pavement	Surfaced With Rock or Gravel	Not Graded to Market Road Standards
57. Highway-Reform School-County Line	2.96	....	2.96	....
58. Hubbard-Boones Ferry	.74	....	.74	....
59. Aurora-Wilsonville	1.87	....	1.87	....
60. East Butteville-Cemetery Corners	1.25	....	1.25	....
61. Donald-Yergens Corner	2.16	....	2.16	....
62. Champoeg-Monument Park	.70	....	.70	....
63. Spong Road	2.00	.65	1.35	....
64. Salem-Fruitland	3.45	2.23	1.22	....
65. West Woodburn-Broadacres-Butteville	8.23	....	2.73	5.50
66. Stayton-Santiam Bridge	.50	.37	.13	....
67. West Stayton-West	2.00	....	2.00	....
68. Aral Corner-Bressel Corner	3.84	....	3.84	....
69. Boones Ferry	3.00	....	3.00	....
70. Woodburn-Hubbard	3.00	....	....	3.00
71. St. Louis-West Woodburn	3.36	....	3.36	....
72. West Woodburn-Gervais-Checkerboard	4.13	....	4.13	....
73. Mt. Angel-Gervais	4.23	....	4.23	....
74. Monitor-Silverton	6.90	....	6.90	....
75. Silverton-Northeast	1.41	....	1.41	....
76. Scotts Mills-Crooked Finger	2.30	....	2.30	....
77. Abiqua	6.00	....	....	6.00
78. Strawberry-Matheny	2.81	....	1.81	1.00
79. Victor Point	3.50	....	....	3.50
80. Riches	3.00	....	....	3.00
81. Coon Hollow	4.08	....	2.08	2.00
82. Fern Ridge	8.56	....	4.56	4.00
83. Siegmund	2.84	....	2.84	....
84. Mehama-Taylors Camp	2.14	....	2.14	....
85. Heiberger-Stayton	1.50	....	....	1.50
86. Shaff	3.00	....	....	3.00
87. Marion-West Stayton	5.39	....	5.39	....
88. Aumsville-Shaw	2.46	....	2.46	....
89. Cottage Farm-Aumsville	5.50	....	....	5.50
90. Liberty-Grabenhorst Corner	1.25	....	....	1.25
91. Twelfth Street	1.87	....	1.87	....
92. Pringle	1.33	....	1.33	....
93. Four Corners-North	4.50	....	1.79	2.71
94. N. P. Williamson	1.73	....	1.73	....
Total in miles	442.15	175.98	182.46	83.71

Turner-Marion Market Road No. 3

The last section of grading and surfacing on this market road, 1.82 miles in length from Sta. 276 south to Sta. 372 at Marion was constructed in 1928. Roadbed width, 24 feet; surface, 18 feet wide by 5 inches deep. Work by county forces; begun in July, 1928; completed in December, 1928. Total cost, $6,495.81. Expended in previous biennium, $5,082.27; expended since previous report, $1,413.54.

Construction of one 90-foot concrete bridge over Mill Creek, southeast of Turner. Work by E. F. Balgeman, contractor; work begun June 1, 1930; incomplete November 1, 1930. Expended to November 1, 1930, $3,010.63. Total estimated cost, $8,517.

Crawford Section, 2.82 miles bituminous pavement, and one triple 4 feet by 6 feet concrete box culvert, Sta. 52+80 to Sta. 133 and Sta. 144 to Sta. 212+50. Box culvert at Sta. 50. Paving 16 feet wide, 4 inches thick. Work by county forces; begun June 1, 1930; incomplete November 1, 1930. Expended to November 1, 1930, $7,631.58. Total estimated cost, $29,046.

Gervais-St. Louis Market Road No. 7

Grading and surfacing of a section 1.7 miles in length, Sta. 98+56.4 to Sta. 189+39.6. Roadbed width, 24 feet; surfacing, 18 feet wide, 5 inches deep. Work by county forces; begun June 1, 1930; completed November, 1930. Expended to November 1, 1930, $5,434.45. Estimated total cost, $8,545.19.

Aurora-Butteville Market Road No. 11

Three and one-quarter miles grading and surfacing from Sta. 0, 1 mile west of Aurora, to Sta. 171+48 at East Butteville. Work by county forces; begun August 1, 1928; completed December, 1928. Total cost, $12,826.27; expended previous biennium, $9,823.21; expended since previous report, $3,003.06.

Yergen's Corner-Newberg Market Road No. 12

Four and sixty-five tenths miles, grade and surface, Sta. 0 at Yergen's corner to Sta. 258 at pavement, 2 miles south of Newberg bridge. Work by county forces; begun July, 1929; completed December, 1929. Total cost, $24,827.48; expended in previous biennium, $23,358.37; expended since previous report, $1,469.11.

Woodburn-St. Paul Market Road No. 14

Construction of two concrete box culverts, one 4 feet by 6 feet box culvert at Sta. 64+85 and one 5 feet by 12 feet box culvert at Sta. 67. Work by county forces; begun September 1, 1930; completed in November, 1930. Expended to November 1, 1930, $7. Estimated total cost, $2,040.

Salem-Whittaker Market Road No. 23

Construction of one 4 feet by 4 feet concrete box culvert at Sta. 72+70. Work by county forces; begun June 1, 1930; completed July 1, 1930. Total cost, $805.37.

Salem-Turner Market Road No. 27

Two reinforced concrete bridges, one at Penitentiary 104 feet in length and one 50 feet in length one-half mile west of the Penitentiary. Work by A. H. Kingsbury, contractor; begun July 1, 1929; completed October 31, 1929. Total cost, $13,753.61. Plans for these bridges were prepared by the State Highway bridge department, and these structures replaced two old light type bridges.

Turner-Aumsville Market Road No. 28

Construction of one 75-foot reinforced concrete bridge, four 60-foot reinforced concrete bridges over Mill Creek, between the towns of Turner to Aumsville. Also one triple reinforced 4 feet by 6 feet box culvert. Roadway 24 feet wide, and on the 75-foot bridge near Turner a sidewalk 4 feet wide was constructed. Work by E. F. Balgeman, contractor; begun May 1, 1930. Expended to November 1, 1930, $17,759.81. Total estimated cost, $25,627.50. The plans for these structures were prepared by the State Highway Bridge Department. These bridges replaced old wornout structures and are an excellent improvement.

Stayton-Mehama Market Road No. 31

Construction of a triple reinforced box culvert at Sta. 86+12, replacing an old wooden bridge. Work by county forces; begun June 1, 1930; completed July 1, 1930. Total cost, $1,537.59.

Stayton-West Stayton Market Road No. 32

West Stayton Section, 1.19 miles regrading and resurfacing, Sta. 0 to Sta. 62+61.8. Roadbed width, 24 feet; surfacing, 18 feet wide, 3 inches deep. Work by county forces; begun August 1, 1929; completed December 1, 1929. Total cost, $3,443.46.

West Stayton Section, bituminous pavement, 1.18 miles, Sta. 0 to Sta. 62+30. Paving 16 feet wide, 4 inches thick. Work by county forces; begun June 1, 1930; completed September, 1930. Cost to November 1, 1930, $3,060.04. Estimated cost, $12,154.

Silverton-Willard Market Road No. 34

Construction of one 88-foot reinforced concrete bridge, over Drift Creek at Sta. 128+50. Work by Edward Krieg, contractor; begun July 1, 1930; completed September 30, 1930. Total cost, $5,437.14. Structure designed by State Highway Bridge Department.

Drift Creek-South Section, 2.23 miles, grade and gravel surfacing, Sta. 114 to Sta. 231+65.2. Roadbed width, 24 feet; surfacing, 18 feet wide, 5 inches deep. Work by county forces; begun August 1, 1930. Expended to November 1, 1930, $11,468.85. Estimated cost, $36,320.89.

The old road over a part of this section was steep and very crooked. The new alignment and grade are to modern standards.

Salem-St. Paul Market Road No. 36

Aral Corner-St. Paul Section, 5.15 miles, grade and surface, Sta. 414 to Sta. 683+50. Work by county forces; begun June 1, 1928; completed November, 1928. Total cost, $24,826.70. Expended previous biennium, $17,165.65. Expended this biennium, $7,661.05.

Quinaby-Hopmere Section, 4.13 miles bituminous pavement; Sta. 43 to Sta. 214, 16 feet wide, 2 inches thick; Sta. 226 to Sta. 248, and Sta. 253 to Sta. 288, 16 feet wide, 4 inches thick. Also one 6 feet by 10 feet reinforced concrete box culvert at Sta. 218. Work by county forces; begun July 1, 1929; completed October 1, 1929. Total cost, $26,483.78.

Hopmere-Aral Corner Section, 2.78 miles of bituminous pavement, Sta. 214 to Sta. 226, Sta. 248 to Sta. 253, Sta. 278 to Sta. 408. Pavement 16 feet wide, 4 inches thick. Work by county forces; begun June, 1930. Expended to November 1, 1930, $6,220.67. Estimated total cost, $28,634.

Pacific Highway (at Brooks)—Labish Market Road No. 37

Labish-West Section, 2.52 miles grade and surface with gravel, Sta. 0 to Sta. 133. Roadbed width, 22 feet; surface, 18 feet wide, 5 inches deep. Work by county forces; begun May 1, 1929; completed October 1, 1929. Total cost, $17,577.14.

Labish Section, 0.76 mile of grade, surface and 1,558 lineal feet of standard pile trestle, Sta. 133 to Sta. 173, at west end of Market Road No. 50. Grade width, 24 feet; surfacing, 18 feet wide, 5 inches deep; bridge, 20 feet wide. Work by county forces; begun July 1, 1930. Expended to November 1, 1930, $18,356.57. Total estimated cost, $27,544.24.

The grading of this section and construction of the bridge provides a short connection for all-year travel across an arm of old Lake Labish, and will save three or four miles of distance to travel. The bridge is one of the longest to be constructed in the state this year. Considerable difficulty in constructing the fill was encountered due to the earth settling in the old lake bed.

West Stayton-Aumsville Market Road No. 40

Construction of two triple 4 feet by 6 feet reinforced concrete box culverts, one at Sta. 25+50 and one at Sta. 180+50. Work by county forces; begun July 1, 1930. Expended to November 1, 1930, $2,578.28. Estimated cost, $3,264.

Sublimity-Willard Market Road No. 42

Sublimity-Willard Section, 3.01 miles of bituminous pavement and construction of one single 6 by 6 feet reinforced concrete box culvert and one double 6 by 6 feet reinforced concrete box culvert. Paving 16 feet wide, 4 inches thick, Sta. 62+50 to Sta. 73, Sta. 129 to Sta. 163, Sta. 194 to Sta. 251, and Sta. 278 to Sta. 335. Culverts were constructed at Sta. 225+70 double 6 by 6 feet and Sta. 300+50 single 6 by 6 feet. Work by county forces; begun June 1, 1930. Expended to November 1, 1930, $11,405.48. Estimated cost, $32,742. This paving covered several sections left when the rest of the road was paved as alignment and grade were not to standard.

Whittaker-Drift Creek-Silver Falls City Market Road No. 43

A section 2 miles long, grading and surfacing from Sta. 884 to Sta. 980+50 at Drift Creek. Work by county forces; begun June, 1928; completed December, 1928. Total cost, $15,429.61. Expended previous biennium, $10,394.56; expended this biennium, $5,035.05.

Drift Creek-Summit Silver Creek grade section, 2.20 miles, grade and surface, Sta. 980+50 at Drift Creek to Sta. 1096+50, Summit Silver Creek Grade. Roadbed width, 24 feet; surfacing, 18 feet wide, 5 inches deep. Also one 6 by 10 feet reinforced concrete culvert over Drift Creek at Sta. 985+15. Work by county forces; begun June 1, 1930. Expended to November 1, 1930, $21,045.94.

Pratum-Willard Market Road No. 44

A section 1.8 miles, grading and surfacing, Sta. 141 east to Sta. 228. Work by county forces; begun June, 1928; completed November, 1928. Total cost, $14,949.97. Expended previous biennium, $11,531.02; expended this biennium, $3,418.95.

Silverton-Hadleys Ranch-Hullt Market Road No. 45

A section 1.84 miles, grading and surfacing, Sta. 171+50 to Sta. 268+50. Also paving 1 mile bituminous pavement south of Silverton, Sta. 0 to Sta. 54. Work by county forces. Total cost, $30,483.77. Expended previous biennium, $25,219.58; expended this biennium, $5,264.19.

Grading and surfacing, 4.02 miles, Sta. 268+50 to Sta. 480+50. Roadbed graded 24 feet wide; surfacing crushed rock 18 feet wide, 5 inches deep. Work by county forces; begun July 1, 1930; completed November, 1930. Expended to November 1, 1930, $28,287.61. Total estimated cost, $29,463.15.

Several changes in alignment were made and this section of the road is now constructed on good alignment and grade.

Gervais-Simmons Church-Macleay Market Road No. 51

Grading and surfacing 3.6 miles, Sta. 0, one-half mile east of Macleay, north to Sta. 190+13. Roadbed width, 24 feet; surfacing, 16 feet wide, 5 inches deep. Work by county forces; begun May 1, 1929; completed October 1, 1929. Total cost, $16,378.52.

Chemawa-Hazel Green and East Market Road No. 52

Little Pudding River bridge, 3.5 miles east of Chemawa. One 100-foot reinforced concrete girder bridge. Roadbed width, 20 feet. A. L. Lamb, contractor; work begun April 1, 1930; completed September 1, 1930. Total cost, $6,599.03. Plans for this bridge were prepared by the State Highway Bridge Department.

Grading, surfacing and construction of one double 4 by 4 feet reinforced concrete box culvert, Sta. 5 to Sta. 15+50, near east end of market road. Grading 24 feet wide, surfacing 18 feet wide, 5 inches deep. Work by county forces; begun July 1, 1930; incomplete November 1, 1930. Expended to November 1, 1930, $2,661.51. Estimated cost, $5,252.48.

Livesley-Halls Ferry-Independence Market Road No. 53

Hall's Ferry-Independence Ferry Section, 4.52 miles, grading and surfacing. Sta. 127+50, near Hall's Ferry to Sta. 366, east of Independence. Roadbed width, 24 feet; surfacing width, 18 feet; depth, 5 inches. Work by county forces; begun May 1, 1929; completed September 1, 1929. Total cost, $29,082.67.

Rosedale-Fairview-Buena Vista Market Road No. 54

Fairview-Buena Vista Section, 6.33 miles, grading and surfacing, Sta. 156+48 at Fairview to Sta. 490+34 at Buena Vista ferry. Roadbed width, 24 feet; surfacing, 18 feet wide, 5 inches deep. Work by county forces; begun May 1, 1929; completed October 1, 1929. Total cost, $42,129.54.

Industrial Schools Road Market Road No. 56

Paving 3.06 miles from Sta. 0 at Feeble-Minded Institution to Sta. 162 at the Penitentiary annex. Work by county forces; begun June 1, 1928; completed November, 1928. Total cost, $33,826.46. Expended in 1928, $33,441.47. Expended this biennium, $384.99.

Highway-Reform School-County Line Market Road No. 57

Killin Bridge Section, 2.0 miles, grading and surfacing, Sta. 0 to Sta. 104. Roadbed width, 24 feet; surfacing, 16 feet wide, 5 inches deep. Work by county forces; begun May 1, 1929; completed October 1, 1929. Total cost, $20,376.90.

Killin Bridge over Pudding River, 120-foot steel span, 44 lineal feet trestle approaches, Sta. 46+47 to Sta. 48+53. Rigdon Bros., contractors; work begun July, 1929; completed March 1, 1930. Total cost, $13,070. Plans prepared by State Highway Bridge Department.

East Butteville-Cemetery Corners Market Road No. 60

Grading and surfacing 1.2 miles, Sta. 0 at East Butteville to Sta. 66. Work by county forces; begun July, 1928; completed December, 1928. Total cost, $4,327.11. Expended previous biennium, $1,593.65; expended this biennium, $2,733.46.

Spong Road Market Road No. 63

Paving 0.65 mile, Sta. 0 at Kizer School, west to Sta. 34+50; bituminous pavement, 16 feet wide, 4 inches thick. Work by county forces; begun August 1, 1929; completed October 1, 1929. Total cost, $4,809.29.

Salem-Fruitland Market Road No. 64

Paving Sta. 42+24 to Sta. 118; 1.43 miles bituminous pavement, 16 feet wide, 4 inches thick. Work by county forces; begun June 1, 1930; completed September 1, 1930. Expended to November 1, 1930, $2,273.03.

Stayton-Santiam Bridge Market Road No. 66

Stayton-Santiam Bridge Section, 0.37 mile paving, Sta. 0 to Sta. 19+50. Bituminous pavement, 16 feet wide, 4 inches thick. Work by county forces; begun June 1, 1930; completed September 1, 1930. Expended to November 1, 1930, $899.50. Estimated cost, $3,811.

Aral Corner-Bressel Corner, Market Road No. 68

Entire road 3.82 miles, grade and surface, Sta. 0 to Sta. 202. Work by county forces; begun May, 1928; completed November, 1928. Total cost, $14,864.38. Expended previous biennium, $13,663.53; expended this biennium, $1,200.85.

Boones Ferry Market Road No. 69

Entire road 2.45 miles, grade and surface from Sta. 0 at Woodburn to Sta. 158+18, west of Hubbard. Roadbed, 24 feet wide; surfacing, 18 feet wide, 5 inches deep, crushed gravel. Work by county forces; begun July 1, 1930; completed November, 1930. Expended to November 1, 1930, $17,433.62.

St. Louis-West Woodburn Market Road No. 71

Entire road 3.23 miles graded and surfaced from Sta. 0 at St. Louis to Sta. 177+04 west of West Woodburn. Roadbed, 24 feet wide; surfacing, 18 feet wide, 5 inches deep. Work by county forces; begun July 1, 1930; completed November, 1930. Expended to November 1, 1930, $12,269.64.

West Woodburn-Gervais-Checkerboard Market Road No. 72

Entire road 4.12 miles, grade and surface from Sta. 0 at West Woodburn to Sta. 218 at Checkerboard. Roadbed width, 24 feet; surfacing, 18 feet wide, 5 inches deep. Work by county forces; begun September 1, 1929; completed August 1, 1930. Expended to November 1, 1930, $12,071.27; 1929 report for 0.32 mile shows cost at $3,665.89.

Mt. Angel-Gervais Market Road No. 73

Entire road 4.23 miles, grade and surface, Sta. 0 to Sta. 223+40. Roadbed width, 24 feet; surfacing, 18 feet wide, 5 inches deep, crushed gravel. Work by county forces; begun July 1, 1929; completed December 1, 1929. Total cost, $33,708.66.

Monitor-Silverton Market Road No. 74

A section 3.61 miles graded and surfaced, Sta. 0 to Sta. 185+28. Roadbed width, 24 feet; surfacing, 18 feet wide, 5 inches deep, crushed gravel. Work by county forces; begun July 1, 1929; completed December 1, 1929. Total cost, $15,238.47.

A section 2.52 miles in length, grading and surfacing from Monitor south, Sta. 190 to Sta. 364. Roadbed width, 24 feet; surfacing, 18 feet wide, 5 inches deep, crushed gravel. Work by county forces; begun July 1, 1930; completed October 15, 1930. Expended to November 1, 1930, $12,998.45. Estimated cost, $17,713.58.

Silverton-Northwest Market Road No. 75

Entire road 1.41 miles, grade and surface, Sta. 0 to Sta. 74. Roadbed width, 24 feet; surfacing, 18 feet wide, 5 inches deep, crushed gravel. Work by county forces; begun August 1, 1929; completed December 1, 1929. Total cost, $7,866.89.

Scotts Mills-Crooked Finger Market Road No. 76

Scotts Mills-South Section, 2.3 miles grade and surface, Sta. 0 at Scotts Mills, south to Sta. 121. Roadbed width, 24 feet; surfacing, 18 feet wide, 5 inches deep, crushed rock. Work by county forces; begun April 1, 1930; completed September 15, 1930. Expended to November 1, 1930, $19,084.24.

Strawberry-Matheny Market Road No. 78

Strawberry-Matheny Section, grade and surface, 1.81 miles, Sta. 0 to Sta. 95+50. Roadbed width, 24 feet; surfacing, 18 feet wide, 5 inches deep, crushed gravel. Work by county forces; begun August 1, 1930; completed November 1, 1930. Expended to November 1, 1930, $13,777.66. This road will probably extend to Silver Creek Falls in future years and is through very rough country.

Coon Hollow Market Road No. 81

West Section, 2.08 miles, grade and surface, Sta. 0 at Sublimity, east to Sta. 109+50. Roadbed width, 24 feet; surfacing, 18 feet wide, 5 inches deep, crushed gravel. Work by county forces; begun May 1, 1930; completed September 1, 1930. Expended to November 1, 1930, $6,714.89. Estimated cost, $7,811.82.

Fern Ridge Market Road No. 82

West Section, 4.54 miles, grade and surface, Sta. 0 north of Stayton, east to Sta. 241. Roadbed width, 24 feet; surfacing, 18 feet wide, 5 inches deep, crushed gravel. Work by county forces; begun May 1, 1930; completed September 1, 1930. Expended to November 1, 1930, $26,129.61. Total estimated cost, $31,673.32.

Siegmund Market Road No. 83

Hill Section, 2.82 miles, grade and surface, Sta. 0 at pavement, northeast to Sta. 150+14.9. Roadbed width, 24 feet; surfacing, 18 feet wide, 5 inches deep. Work by county forces; begun May 1, 1929; completed December 1, 1929. Total cost, $18,189.91.

Mehama-Taylor Camp Market Road No. 84

Mehama-Taylor Camp Section, 2.14 miles, grade and surface, Sta. 0 at Mehama to Sta. 113+50 at Taylor Camp. Roadbed width, 24 feet; surfacing width, 18 feet; depth, 5 inches. Work by county forces; begun June 1, 1929; completed December 1, 1929. Total cost, $16,809.82.

Marion-West Stayton Market Road No. 87

Entire road from West Stayton to Marion, 5.39 miles, grade and surface, Sta. 0 to Sta. 284+50. Roadbed width, 24 feet; surfacing, 18 feet wide, 5 inches deep, crushed gravel. Work by county forces; begun May 1, 1930; completed September 1, 1930. Expended to November 1, 1930, $14,433.15. Estimated cost for the project, $22,558.60. With the completion of this section a graded, macadamized or paved road now connects Jefferson with Stayton.

Aumsville-Shaw Market Road No. 88

Aumsville-Shaw Section, 2.46 miles, grade and surface, Sta. 0 to Sta. 130+50. Roadbed width, 24 feet; surfacing, 18 feet wide, 5 inches deep. Work by county forces; begun May 1, 1929; completed December 1, 1929. Total cost, $13,507.93.

Twelfth Street, Market Road No. 91

Entire road, 1.87 miles, grade and surface, Sta. 0 at south city limits of Salem to Sta. 98+50 at Pacific Highway. Roadbed width, 24 feet to 32 feet; surfacing, 18 feet wide, 5 inches deep. Work by county forces; begun September 1, 1930; incomplete to November 1, 1930. Expended to November 1, 1930, $10,530.52. Total estimated cost, $25,976.60. The grading and surfacing of this road provides a short road from North Capitol Street in Salem via South 12th Street to the Pacific Highway, and will no doubt carry considerable traffic.

Pringle Market Road No. 92

Entire road, 1.33 miles, grade and surface, Sta. 0 at Pacific Highway, east to Market Road No. 25. Roadbed width, 24 feet; surfacing, 18 feet wide, 5 inches deep, crushed gravel. Work by county forces; begun May 1, 1930; completed August 1, 1930. Expended to November 1, 1930, $6,606.55.

Four Corners, North, Market Road No. 93

Silverton Road-Pacific Highway Section, 1.79 miles, grade and surface, Sta. 0 to Sta. 44+41.5. Roadbed width, 24 feet; surfacing, 18 feet wide, 5 inches deep. Work by county forces; begun August 1, 1930; completed September 1, 1930. Expended to November 1, 1930, $3,536.21.

N. P. Williamson Market Road No. 94

Entire road between Market Roads 37 and 52, 1.73 miles of grading and surfacing, Sta. 0 to Sta. 91+48. Work by county forces; begun August 1, 1930; completed October 15, 1930. Expended to November 1, 1930, $7,879.50.

MORROW COUNTY

Since the beginning in 1920 a total of $846,542.39 has been made available for market roads in Morrow County, of which $169,808.98 was from the state market road appropriation, $165,208.66 from county market road levies, and approximately $511,524.75 from cooperative funds such as bonds, district special levies, general road fund, motor vehicle fund, etc. Of this total, $835,968.31 has been expended and the following result accomplished: 102.66 miles graded, 94.39 miles surfaced; cooperation in Heppner-Spray Forest Highway, $82,193; maintenance during the past six years costing $13,737.79, and cooperation in state highway construction, $75,000.

During the last two years $147,395.52 has been spent and the following accomplished: 40.55 miles graded, 33.16 miles surfaced, and maintenance cost $9,790.28.

A bond issue was voted in 1925 which to a very considerable extent advanced the completion of certain roads on the Morrow County market road system. Originally the bond issue applied to certain roads which were all market roads but some of these were withdrawn from the system but were built to the same standards and specifications. Probably the last of the revenue, from the sale of bonds will be spent in 1930 and after that the construction program will be very limited.

Roads of major importance were surfaced 16 feet wide. Many of the roads had only local use at a very limited traffic and were surfaced nine feet in width and it was possible by this means to surface many more miles. These narrow sections are proving quite satisfactory.

STATUS OF MARKET ROAD SYSTEM, AS OF NOVEMBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement		
		Surfaced with Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Ione-Gooseberry	19.00	14.76	....	4.24
2. Upper Eight Mile	29.00	18.17	3.95	6.88
3. Lexington-Jarmin	19.24	19.24	....	....
5. Lena-Vinson (Highway)	....	....	....	....
6. Heppner-Spray	25.50	14.00	....	11.50
8. Lexington-South	12.00	6.45	....	5.55
9. Ione-Boardman	25.00	9.66	1.94	13.40
14. Jordan-Rhea Creek	18.50	8.86	2.38	7.26
15. Rhea Creek-Blackhorse	14.00	3.25	....	10.75
18 Eight Mile-Hardman	8.50	....	....	8.50
Total miles	170.74	94.39	8.27	68.08

The work is under direction of the County Court: R. L. Benge, Judge, and L. P. Davidson until his death in 1930 and since then by Ernest Helicker and Geo. Bleakman, Commissioners. Harry Tamblyn is County Engineer and Wm. Lee McCaleb, County Foreman. Costs are reasonable and very good work is being done.

Upper Eight Mile Market Road No. 2

In previous years, grading and surfacing was completed from Heppner to a point 900 feet beyond the crossing of Rhea Creek or 10.38 miles from Heppner. Grading and surfacing was started on the section west of Rhea Creek at Sta. 9+00 in 1928, and work done to the extent of $33,559.69. In 1929, grading was completed to Sta. 619+80 at the end of the Ione-Gooseberry Market Road No. 1 and surfacing was completed to Sta. 420. The roadbed was 22 feet and 20 feet, and the surfaced section 14 feet wide by 8 inches deep for about two miles west of Rhea Creek and then 9 feet wide to the end of the surfacing project. The total cost was $60,126.05, of which $40,000 was from the bond issue and the rest from market road funds. A definite route from the end of this project to the Gilliam county line has not yet been selected.

Heppner-Spray Market Road No. 6

Early in 1930, the County Court offered to grade the McKinney Creek unit of this road if the State Highway Commission would allot funds for constructing another section within the forest. This offer was accepted. A location survey on this section 4.8 miles in length has been made but no construction undertaken because taxes have come in slowly. The estimate of cost to grade this section is $16,775 and to surface $18,400; total, $35,175. A small section, Sta. 14 to Sta. 27, was constructed early in 1930 where the road bed became impassable; cost $953.55.

From Hardman to the mouth of Chapin Creek or the beginning of the completed Forest Highway project is 6.65 miles. The estimated cost to grade is $35,550 and to surface $26,600 or a total of $62,150. It is expected that the forest section can be completed in two more years and the County Court had hoped to have the two units near Hardman graded and enough surface to carry traffic by that time but it appears now that they will not have sufficient funds.

Ione-Boardman Market Road No. 9

This bond project with an allotment of $56,000 starts from the Oregon-Washington Highway just south of Ione and extends to Boardman. The plan has been to build north from Ione to the limits of producing farms and build south from Boardman to the edge of the irrigated section, and then to connect up as funds permitted and traffic needs demanded. The land north of Ione is in large ownerships and not of high value, so, a diagonal route was decided upon but to get this it was necessary to build a spur north along the section line from Sta. 129 for three-quarters of a mile. Grading was done to Sta. 631 and surfacing to Sta. 510 which was at the end of economic haul of surfacing material. For the first 80 stations a 16-foot Class "C" road was graded and surfaced 12 feet wide, beyond that a wide grade section was used and surfacing put on 9 feet wide. It is the intention to carry on grading operations north of Sta. 613 late this year. Project cost, $50,755.48, all paid out of the bond fund.

Jordan-Rhea Creek Market Road No. 14

In 1929, a short section from Sta. 114 to Sta. 133 which has been left on previous projects on account of cost, was graded and surfaced at a cost of $2,423.40; 16-foot Class "C" roadbed and 9-foot crushed rock surface.

In the same year, grading was done from Sta. 425 to Sta. 644 and surfacing from Sta. 425 to Sta. 468. Roadbed 16-foot Class "C" and surface 9 feet by 8 inches of crushed rock. Cost, $14,769.01, of which $8,047.03 was paid from market road funds and $6,721.98 from bond funds.

Another unit extended from Sta. 214 to Sta. 425 using same construction standards. Total cost, $23,278.02, all paid out of bond funds.

Rhea Creek-Black Horse Market Road No. 15

The only construction on this road during the past two-year period is the section beginning Sta. 0+00, at the intersection with Market Road No. 8 and extending north to Sta. 118+70. The roadbed section is 16 feet Class "C" and surfacing 9 feet by 8 inches. Rock was crushed while surfacing operations were under way on Market Road No. 8 and charged to that job. Total cost, except rock surfacing, $4,909.09, all paid out of market road funds.

MULTNOMAH COUNTY

During the time the Market Road Act has been in operation the State Highway Commission has apportioned to Multnomah County each year 10 per cent of the state market road appropriation, which is the maximum amount which can be apportioned to any one county. A total of $1,168,676.79 has been turned over to the Multnomah County treasurer, which amount was matched with an equal amount raised by a general levy on all the taxable property of the county. These funds have been expended on the roads of the county, and, as there is no classification made of the roads of the county into state roads, market roads or county roads, there is likewise no segregation of funds and the market road funds are included with funds from other sources in the construction of the county roads. During the years prior to the amendment of the act, certain of these county projects were designated as market road projects and plans and specifications placed on file with the Highway Commission. During the last six years, however, the expenditure of the market road funds in Multnomah County has been left entirely to the direction of county officials. The progress which Multnomah County is making in the improving of their county roads, which in fact are state roads and market roads in importance, is noteworthy and speaks well for the county road organization. Many problems are encountered which involve enormous traffic demands and costly right of way, and other problems peculiar to Multnomah County and which are entirely different from problems in other sections of the state. Advances are being made in all types of construction and maintenance. During the past years many miles of road have been oiled. The types range from light oil for maintenance and dust palliative to heavy Gasco penetration type, using 1½-inch rock. An intermediate type predominates, however, with prime coat of fuel oil and surface of heavy hot Gasco and screenings.

POLK COUNTY

Beginning with the year 1920, a total of $599,261.68 has been made available for market roads in Polk County, of which $285,843.92 was from the state market road appropriatiion, $284,782.73 from county market road levies and approximately $28,635.03 from county cooperative funds, such as bonds, special district levies, general road funds, motor license funds, etc. Of this amount, $600,179.57 has been expended and the following work accomplished: 88.36 miles graded; 90.12 miles surfaced; 5.0 miles resurfaced; 1.75 miles paved; 6.0 miles oiled, surface treatment; and major bridges costing $6,000; also maintenance during the last six years costing $21,164.43.

During the past two years, $87,300.56 has been expended and the following accomplished: 20.03 miles graded; 18.63 miles surfaced; 5.0 miles resurfaced; 6.0 miles oiled, surface treatment; and an average of 125 miles maintained.

STATUS OF MARKET ROAD SYSTEM AS OF NOVEMBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement		
		Paved With Bituminous Pavement	Light Oil Surface Treatment	Surfaced With Rock or Gravel
1. Perrydale-Byerly Corner-Highway	5.7	....	....	5.7
2. Highway-Zena-Lincoln	7.3	....	....	7.3
3. Ballston Road	6.8	....	....	6.8
4. Dallas-Perrydale-County Line	8.2	....	....	8.2
5. Wallace Road	9.8	....	2.8	7.0
6. Falls City, East	4.0	....	....	4.0
7. Lewisville-Airlie-Suver	10.2	....	....	10.2
8. Dallas-Lewisville	9.8	....	....	9.8
9. Independence South to County Line	9.6	....	....	9.6
10. Grand Ronde-Salmon River	8.3	....	....	8.3
11. Dallas-Orr's Corner	4.2	....	....	4.2
12. Red Prairie	5.2	....	....	5.2
14. Independence-Brunk's Corner	5.7	2.5	3.2	....
15. Kings Valley	15.7	....	....	15.7
16. Dallas-Salt Creek-Wallace Bridge	15.6	....	....	15.6
Total in miles	126.1	2.5	6.0	117.6

During the past two years, good progress was made on the market road system in Polk County. West of Perrydale Market Road No. 1 was graded and surfaced. The Wallace Road was graded and surfaced from the Wallace Farm to near the Yamhill County line. A section on the Lewisville-Airlie-Suver road was graded and surfaced and in 1931 this market road will be completed.

A section was graded on Market Road No. 9, south of Independence. On the Dallas-Salt Creek-Wallace Bridge road a section was regraded to better alignment, and several sections resurfaced. On the Independence-Brunk's Corner Market Road a section was oiled from the north end of the pavement to the Salem-Dallas State Highway and on the Wallace Road a section from West Salem to the Wallace Farm nearly 3 miles in length was surface treated with oil. The maintenance organization with tractors and blades and motor graders have kept the roads very well maintained during the fall, winter and spring. During the summer this equipment is engaged on construction.

Engineering work was handled in 1929 by E. J. Howe, County Engineer, and Ralph Howe who succeeded E. J. Howe in September. In 1930 engineering was handled by W. W. Larson, County Engineer. The work has been under the direction of County Judge G. L. Hawkins and Commissioners Frank Farmer and C. C. Gardner.

Perrydale-Byerly Corner-Highway Market Road No. 1

Perrydale-Salt Creek Section, 1.82 miles, grading and surfacing, Sta. 87 at Salt Creek to Sta. 182+98 at Perrydale. Roadbed width, 26 feet; surfacing, 16 feet wide, 8 inches deep, crushed gravel. Work by county forces; begun June, 1929; completed November, 1929. Total cost, $6,633.32.

Byerly Corner Section, 1.65 miles, grading and surfacing, Sta. 0 at Byerly Corner to Sta. 87 at Salt Creek. Roadbed width, 26 feet; surfacing width, 16 feet; depth, 8 inches, crushed gravel. Work by county forces; begun February 15, 1930; completed November 1, 1930. Total cost, $7,960.30.

Wallace Road Market Road No. 5

Stratton-Windsor and Lincoln Sections, 0.81 mile grading and 152 lineal feet trestle bridge, Sta. 71 to Sta. 88; Sta. 207 to Sta. 213+80; Sta. 240 to Sta. 259. Roadbed width, 26 feet; bridge, 20 feet wide. Grading by R. L. Houck, contractor; bridge construction by J. F. Johnson. Work begun July, 1929; completed October, 1929. Total cost, $11,913.04.

Lincoln-Windsor Section, 2.96 miles grading and 3.77 miles surfacing, Sta. 60 to Sta. 213+76 and Sta. 259 to Sta. 306+48. Roadbed width, 26 feet; surfacing, 20 feet wide, 8 inches deep, crushed gravel. Work by county forces; begun January, 1930; completed October, 1930. Total cost, $17,767.18; market road funds, $11,078.68; general funds, $6,688.50.

Lewisville-Airlie-Suver Market Road No. 7

Lewisville-Staat's Corner Section, 3.91 miles of grading and surfacing, Sta. 0 south of Lewisville to Sta. 209 at Staat's corner, east of Airlie. Roadbed width, 26 feet; gravel surfacing, 16 feet wide, 8 inches deep. Work by county forces; begun May, 1929; completed August, 1929. Total cost, $9,315.20.

Staat's Corner-DeArmond Section, 3.11 miles of grading and gravel surfacing, Sta. 209 at Staat's Corner to Sta. 373 at DeArmond Ranch. Roadbed width, 26 feet; surfacing width, 16 feet, 8 inches deep. Work by county forces; begun June, 1930; completed October, 1930. Total cost, $22,942.28; market road fund, $19,701.48; general fund, $3,240.80.

Dallas-Lewisville Market Road No. 8

Dallas-Falls City road section, at several places the cuts and fills were widened and culverts extended; also resurfacing was placed using crushed gravel. Roadbed graded 26 feet wide; surfacing placed 18 feet wide, 8 inches deep. Work by county forces; begun August, 1929; completed October, 1929. Total cost, $3,051.47.

[POLK]

Independence-Brunk's Corner Market Road No. 14

Independence-Brunk's Corner Section, 2.5 miles of bituminous pavement patching; 3.2 miles of reoiling with 60-70 per cent road oil. Pavement patching by State Highway Department maintenance forces; reoiling by county forces. Work begun May, 1930; completed August, 1930. Total cost, $4,918.11. The pavement on this section had become badly worn and 396 tons of material were placed. The surface was greatly improved.

Kings Valley Market Road No. 15

Peedee Section, 0.1 mile grade widening and surfacing, near Peedee. Work by county forces; begun June, 1929; completed November, 1929. Total cost, $462.39.

Dallas-Salt Creek-Wallace Bridge Market Road No. 16

Wallace Bridge-East Section, 2.35 miles of crushed gravel surfacing, Sta. 4 at south side of Yamhill River southeast to Sta. 128. Surfacing 16 feet wide, 4 inches deep. Work by county forces; begun June, 1929; completed July, 1929. Total cost, $2,235.12.

Butler Hill Section, 0.58 mile grading and surfacing, Sta. 439+50 at foot of east side Butler Hill to Sta. 470. Roadbed width, 30 feet; surfacing, 16 feet wide, 8 inches deep. Work by county forces; begun August, 1930; incomplete November, 1930. Expended to November 1, 1930, $4,336.11.

Dallas to Butler Hill, resurfacing several sections of macadam, approximate distance 5 miles. Work by county forces; begun April, 1930; completed October, 1930. Total cost, $5,922, general funds.

SHERMAN COUNTY

Since the beginning of market road work in 1920, a total of $491,849.33 has been made available for market roads in Sherman County, of which $166,610.80 was from the state market road appropriation, $250,573.11 from county market road levies and approximately $74,665.42 from cooperative funds such as bonds, district special taxes, motor license funds, etc. A total of $528,592.41 has been expended and the following work accomplished: 133.52 miles graded; 133.52 miles surfaced; maintenance during the last six years costing $15,809.97 and cooperation on state highways $30,385.

During the past two years $82,158.02 has been spent and the following accomplished: 13.38 miles graded; 13.38 miles surfaced and maintenance cost, $6,602.20.

STATUS OF MARKET ROAD SYSTEM, AS OF OCTOBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement	
		Surfaced with Rock	Not Graded to Market Road Standards
1. Kent-East	6.16	6.16	....
2. Grass Valley-Shearars Grade	14.38	14.38	....
3. Moro-Lone Rock	6.75	6.75	....
4. Wasco-West	3.00	3.00	....
5. Erskine	4.50	....	4.50
6. Fulton Canyon	6.35	6.35	....
7. Mudd Springs Canyon	5.75	2.50	3.25
8. Fulton-Anderson	5.40	5.40	....
9. Hay Canyon	6.10	6.10	....
10. Grass Valley-Rutledge	6.47	6.47	....
11. Rosebush	3.00	....	3.00
12. Kent-West	5.50	1.00	4.50
13. Liberty	5.00	....	5.00
14. Rutledge-Lone Rock-Hay Canyon	9.50	....	9.50
15. Monkland	7.45	6.20	1.25
16. Bull Canyon	3.75	0.50	3.25
17. Cottonwood	6.00	....	6.00
18. Wasco-Klondike-East	8.50	8.00	0.50
19. Wasco-Rufus	10.00	3.12	6.88
20. Van Gilder	2.67	2.67	....
21. Moro-Gordon Ridge	2.00	....	2.00
22. Klondike-North	1.00	1.00	....
23. Klondike-Hay Canyon Station	4.29	4.29	....
Total in miles	133.52	83.89	49.63

Sherman has continued as one of the leading counties in organization and management and efficient construction and maintenance. While Sherman County is small and funds are limited and construction and surfacing are difficult, wonderful results have been obtained in the amount of road built and maintained with the funds available. Owing to limited funds a policy has been adopted to concentrate all funds and equipment on one section of the county in one year or period and then to move to another section. This has resulted in great economy. The County Engineer is, in reality, the executive officer for the County Court and all location, construction, etc., is placed in his hands under their general direction. Homer S. Wall is County Engineer. E. D. McKee is Judge and L. L. Peetz and A. A. Dunlap, Commissioners.

Kent East Market Road No. 1

Survey was made in 1929 which cost $700.12. In 1930, a contract was let to Roe B. White to grade from Sta. 0+00 (1977 feet east of the Sherman Highway on Second street in Kent) to Sta. 325+50, 24 feet roadbed. Cost, $5,830.83. County forces surfaced the project, the base 12 feet wide by .40 feet deep; top 14 feet wide by .40 feet deep. Cost, $21,360.63. The entire job for grading and surfacing cost $31,600.06. There is still some work to be done which will be completed in 1930.

Grass Valley-Sherar Bridge Market Road No. 2

In 1928, the section from Sta. 9+87 at Grass Valley to Sta. 378 was graded and surfaced. In 1929, a contract was awarded to Roe B. White for grading from Sta. 378 to Sta. 759 at the top of Sherars Grade. County forces did the surfacing. Roadbed 24 feet, surfaced 12 feet wide by .80 feet deep. Total cost of this unit, $39,921.13, of which amount $25,134.10 was spent for surfacing. In 1930, $4,820.04 was spent to complete, $300 being for culvert headwalls and $4,520.04 for additional surfacing.

TILLAMOOK COUNTY

Since the Market Road Act took effect in 1920 a total of $737,372.33 has been made available for market roads in Tillamook County, of which $308,281.92 was from the state market road appropriation, $280,262.76 from county market road levies and approximately $148,827.65 from cooperative funds, such as bonds, motor licenses, O. & C. funds, district specials, general road fund, etc. A total of $738,281.56 has been expended and the following work accomplished: 64.50 miles graded; 59.70 miles surfaced; 2.70 miles paved; 7.97 miles resurfaced; major bridges costing $79,837; and maintenance during the last six years cost $28,419.65.

During the last two years $184,013.98 has been spent and the following accomplished: 21.23 miles graded; 23.93 miles surfaced; 7.97 miles resurfaced; and maintenance cost $16,564.38.

During 1929 and 1930 good progress has been made toward completion of the market road system of the county. On Netarts Market Road No. 2, grading and widening and surfacing has continued toward Netarts. On Sand Lake-Woods-Cloverdale Market Road No. 3, a quarry has been opened up south of Sand Lake and all of the road north of this has been graded and surfaced. Surveys have been made to Woods and some clearing done.

STATUS OF MARKET ROAD SYSTEM AS OF OCTOBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement			
		Paved With Concrete	Surfaced With Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Wheeler-Nehalem-Scovill Bridge	6.60	....	5.10	....	1.50
2. Netarts	9.10	1.20	4.00	2.10	1.80
3. Sand Lake-Woods-Cloverdale	17.00	....	12.70	....	4.30
4. Bay Ocean	5.40	....	5.40	....	....
5. Trask River	6.10	1.50	4.60	....	....
6. Wilson River	3.70	....	2.30	....	1.40
7. North Fork Nehalem-Camp 4 Jct.	1.20	....	.80	....	.40
8. Neah-Kah-Nie Mountain	9.30	....	....	1.00	8.50
9. Miami River	12.80	....	....	....	12.80
10. Doughty	1.70	....	....	....	1.70
11. Kilchis River	2.00	....	....	....	2.00
12. Wilson River Loop	3.40	....	3.40	....	....
13. Johnson-Bridge-Petz Corner	3.20	....	2.70	....	.50
14. Long Prairie Factory-Quick Corn.	2.60	....	1.50	....	1.10
15. Tillamook South to Wells Cor.	3.20	....	2.90	....	.30
16. Pacific City	3.50	....	3.50	....	....
17. Little Nestucca	9.70	....	1.60	....	8.10
18. Big Nestucca	13.70	....	7.00	....	6.70
19. South Bank Little Nestucca	2.20	....	2.20	....	....
Total in miles	116.40	2.70	59.70	3.10	50.90

On Bay Ocean No. 4, widening, slide removal and additional surfacing has been done. During 1930, the road was open to travel all season. On Nehalem-Scovill Bridge Market Road No. 2 there remains only a short gap yet to widen and surface. Various roads in the flat country east of Tillamook have been widened and surfaced.

On Neah-Kah-Nie Mountain Market Road No. 8 work has continued each year and the road is now opened up well toward Short Sand Beach. Late in 1930 the County Courts of Clatsop and Tillamook counties agreed to each pay to the Highway Commission $25,000 per year for four years on condition that the state take over and complete the coast route instead of further improving the present inside route. This offer was accepted on condition that the counties maintain the inside route when the outside route is completed.

Maintenance is becoming better organized each year and better equipment obtained. The county is divided into three districts, each member of the court actively being in charge of one district. More use is being made of crushed gravel and considerable is saved on surfacing as nearly all quarries are hand quarries.

The work is all under direction of the County Court: F. A. Beltz, Judge; Frank Owens and Ed H. Lindsay, Commissioners. W. S. Coates is County Engineer.

Wheeler-Nehalem-Scovill Bridge Market Road No. 1

In 1929, county forces resurfaced from the Wheeler Overhead Crossing at Sta. 1260 to the Nehalem Draw Bridge at Sta. 1305. Width, 16 feet. Cost, $1,271.58, of which $36.31 was market road and $1,235.37 was general road fund.

A contract was let in 1929 for cleaning, spot painting, painting the Nehalem drawbridge and painting handrail. Cost, $924.10.

In 1930, the Scoville bridge was cleaned and painted and the approaches rebuilt. Cost, $894.88, of which $110.84 was market road and $784.04 was general road fund.

Bridge over small creek one-quarter mile from Nehalem City was rebuilt. This was a concrete bridge which had collapsed. Cost, $2,075.04, of which $40 was market road and $2,035.04 was general road fund.

Grading and surfacing from Sta. 1592 to Sta. 1555. Work done by county forces in 1930. Roadbed 24 feet. Surface 12 feet by 8 inches. Cost, $9,682, of which $7,273.88 was market road and $2,409 general road fund.

Netarts Market Road No. 2

Tillamook River Drawbridge Section, bridge, grading and surfacing from Sta. 60+44 to Sta. 75 (Sta. 60 is 1.38 miles from Third Street and Fourth Ave. on Roosevelt Highway in Tillamook). Bridge built in 1928 and 1929 by Clackamas Construction Co. Grading and surfacing done by county forces. Roadbed 26 feet, surface 16 feet wide by 8 inches. Cost reported in 1928, $21,475.13; total cost, $22,488.74, of which $21,888.74 was market road and $600 general road fund.

In 1930, the covered wooden span over Trask River about 0.3 mile west of Tillamook was redecked and approaches rebuilt by county forces. Cost, $2,085.89, general road fund.

In 1929, county forces removed slides and added about 300 yards of crushed rock between Tillamook and Oceanside. Cost, $1,454.13, of which $312.07 was market road, $896.36 general and $185.86 district funds.

In 1930, county forces graded and surfaced from Sta. 233 to Sta. 266. Roadbed 24 feet, surface 12 feet wide by 8 inches. Cost, $4,479.37, of which $3,318.37 was market road and $1,161 general road fund.

Sand Lake Market Road No. 3

Cheese Factory-Roenike Ranch Section, 2.48 miles of grading. Work done by county forces (except contract for clearing 426-484) from Sta. 353 to Sta. 484 in 1929. Roadbed 24 feet. Cost, $18,759.15, of which $13,287.04 was market road and $5,472.11 general road fund. In 1930, county forces graded from Sta. 342 to Sta. 353, surfaced from the quarry at Sta. 485 from Sta. 342 to Sta. 486 by contract awarded to Feldshaw & Co. Cost in 1930, $16,142.96, of which $13,380.80 was market road and $2,762.16 general road fund. Surface 14 feet wide by 8 inches.

In 1929, county forces redecked and repaired six small bridges. Cost, $256.93, of which $100 was market road and $156.93 was general road fund. County forces placed additional surfacing on first two miles west of the highway. Cost, $1,701.56, of which $716.88 was market road and $984.64 general road fund.

Bayocean Market Road No. 4

Drawbridge-Bayocean Section, 4.00 miles of slide removal and surfacing. Work done by contract by Rigdon Bros. from Sta. 20+50 to Sta. 34+50 and from Sta. 90 to Sta. 291 at Bayocean. Roadbed 24 feet, surface 14 feet wide by 8 inches. Cost, $25,776.20, of which $23,989.32 was market road, $1,605.32 general road and $181.56 district funds. In 1930, county forces removed slides, widened and added surfacing material from Sta. 20 to Sta. 291. Cost, $5,647.98, of which $3,341.07 was market road and $2,306.91 general road fund.

Trask River Market Road No. 5

Fairview-Aplanalp Section, 2.86 miles of grading and surfacing. Work done by county forces in 1929 from end of concrete pavement at Sta. 21 to Sta. 0 to Sta. 130. Roadbed 26 feet, surface 16 feet wide by 4 inches on old base. Cost, $4,967.63, of which $3,216.54 was market road and $1,751.09 general road fund. In 1930, county forces graded and surfaced from the end of the 1929 project at Sta. 130 to Sta. 230 at the Fish Hatchery. Cost, $9,042.45, of which $4,626.53 was market road and $4,415.92 general road fund.

Wilson River Market Road No. 6

Fairview-Bester Ford Section, 2.27 miles of grading and surfacing. Work done by county forces in 1929 from Sta. 0 at end of concrete pavement to Sta. 1290. Roadbed 26 feet. Surface 16 feet by 3 inches; old surface scarified and used for base. Cost, $4,502.28, of which $2,837.90 was market road and $1,664.38 general road fund.

County forces in 1930 widened grade and placed gravel shoulders along the concrete pavement for 1.5 miles east of Tillamook, and placed additional rock on the project of 1929 from Sta. 0 at end of pavement to Sta. 120. Cost, $2,370.74, of which $1,713.72 was market road and $657.02 general road fund.

North Fork Nehalem Draw bridge to Camp 4 Junction No. 7

In 1929, county forces did some clearing, plans and surveys completed. Cost, $207.80. In 1930, county forces built an embankment from Sta. 7+80 to Sta. 17 taking the material from cuts west of the bridge along Market Road No. 1 and graded from Sta. 17 to Sta. 43 and surfaced Sta. 7+80 to Sta. 43; also rebuilt approaches to bridge. Cost, $6,305.18, of which $1,063.60 was market road and $5,241.58 general road fund.

Neah-Kah-Nie Mountain Market Road No. 8

Work by county forces has continued since 1926 and in 1930 the roadbed around the rock face of the mountain was completed. A steam shovel by side casting material built a road 24 feet wide from Sta. 248 to Sta. 281. Along the heavy rock work, there is still some excavation to be done and ditches to shoot and clean. This will furnish the rock for walls on the outside, construction of which will provide a roadbed of minimum width of 36 feet. Final expenditures for 1928 were $18,608.13 instead of $16,752.14 as reported November 1 of that year. In 1929 $11,492.09 was spent, of which $9,271.11 was market road, $23 general road and $2,197.98 district funds. In 1930 $7,188.57 was spent, of which $5,539.53 was market road and $1,649.34 general road fund.

Miami River Market Road No. 9

In 1929, a 180-foot steel span was erected about on the site of the Lowman Bridge by J. J. Badraun, contractor. As this location is only temporary the span only was paid for with market road funds with the expectation that the span could later be moved by barges, etc., to a new location. Cost, $11,857.80, market road, and $6,370.66 general road fund for piers and 173 feet of trestle approach.

In 1930, $1,462.68, of which $1,352.31 was market road and $110.07 general road fund, was spent in rebuilding approach trestle.

Wilson River Loop Market Road No. 12

Highway to Cemetery Corner Section, 3.45 miles of grading and surfacing. Work done by county forces in 1929 from Sta. 0 at Highway to Sta. 182+25.5. Roadbed 26 feet. Surface 16 feet by 2 inches; existing surface scarified and used for base. Cost, $3,276.43, of which $2,318.96 was market road and $957.45 general road fund.

Johnson Bridge-Pelz Corner Market Road No. 13

In 1928 a contract was awarded to the Clackamas Construction Co. for furnishing and erecting a 120-foot steel truss span and frame trestle approaches to replace the Johnson Bridge. Work started in May, 1928 and nearly all work done in that year but payments deferred until 1929. Total cost, $12,073.78, of which $8,477.27 was market road and $3,596.51 general road fund.

Grading and surfacing, 3.18 miles from Sta. 0 to Sta. 167+80 at south end of Johnson Bridge. Work done by county forces in 1929. Roadbed 26 feet. Surface 16 feet wide by 3 inches, old surface scarified and used for base. Cost, $3,439.02, of which $2,277.15 was market road and $1,161.87 general road fund.

Long Prairie Factory-Quick Corner Market Road No. 14

Cheese Factory-East Section, 1.41 miles of grading and surfacing. Work done by county forces in 1929 from Sta. 0 at Long Prairie cheese factory to Sta. 74+44. Roadbed, 24 feet. Surface, 12 feet wide by 4 inches; old surface scarified and used for base. Cost, $2,926.98, of which $1,585.80 was market road and $1,341.18 general road fund.

Tillamook South to Wells Corner Market Road No. 15

In 1929, county forces added rock to the section from Sta. 0 at Wells Corner to Sta. 53 at Blazer Bridge. Cost, $151.96, of which $91.96 was market road and $60 general road fund.

Little Nestucca Market Road No. 17

Dolph-West Section, 0.80 mile of grading. Work done by county forces from Sta. 0 at Dolph to Sta. 44. Roadbed, 14 feet. Cost, $3,153.66, to date of which $576.17 was market road and $2,577.49 general road fund. Estimated cost, $7,475.

Big Nestucca Market Road No. 18

Resurfacing from Beaver-East, 2.60 miles. Work done by county forces from Sta. 0 at Beaver to Sta. 136+61. The roadbed was widened to 24 feet. Surfacing put on 12 feet wide by 2 inches. Cost, $11,158.53, of which $8,277.22 was market road and $2,881.31 general road fund. Cost of this project is high for the year as it includes the crusher set up and shooting the quarry. In 1930 the above work was continued to Sta. 389. Cost, $8,253.21, of which $4,365.17 was market road and $3,888.04 general road fund.

South Bank Little Nestucca Market Road No. 19

Highway-East Section, 0.17 mile of grading and surfacing. Work done by county forces in 1930 from Sta. 517 to Sta. 526 on the Roosevelt Highway. Roadbed, 20 feet; surface, 12 feet by 8 inches. Cost, $3,470.33, of which $468.37 was market road and $3,001.96 general road fund.

UMATILLA COUNTY

Since the Market Road Act took effect in 1920, a total of $1,504,226.19 has been made available for market roads in Umatilla County, of which $716,392.14 was from the state market road appropriation, $668,495.13 from county market road levies and approximately $119,338.92 from cooperative funds such as bonds, motor license, general road, district, special road district, etc. A total of $1,461,250.67 has been expended and the following work accomplished: 214.98 miles graded; 199.93 miles surfaced; 2.93 miles resurfaced; major bridges cost $59,708; maintenance during the past six years cost $64,240.27 and cooperation on state highway construction to the extent of $136,386.

During the last two years $197,986.86 has been spent and the following accomplished: 58.31 miles graded; 50.87 miles surfaced; 2.93 miles resurfaced and maintenance cost $27,564; also cooperation on state highway construction to the extent of $8,686.83.

Good progress has been made during the last two-year period. New equipment has been purchased and a lighter type of road built where the traffic is extremely light except during wheat hauling season. Special road districts were formed and taxes voted in 1929 and 1930 and five new districts were formed and a tax voted for 1931. Practically all of the market road fund except that used for maintenance is used to match these special district funds.

The road system is now getting quite well connected up and several new roads were designated by the County Court in order to provide funds to match the special district funds. These new roads are:

No. 54—Myrick-Reuther Corner.

No. 55—Mullenkopf School-North Juniper.

No. 56—Gerking Flat-Wayland.

No. 57—Athena-La Marr Gulch.

No. 39—Mission-Cayuse was extended to Thorn Hollow.

With a few exceptions in 1929 all grading and surfacing is done with county forces and very efficient work done. The county has operated one rock crushing outfit, which has operated two daily shifts. Moving time and costs have been reduced to a minimum. Low costs in surfacing have resulted.

Maintenance work is organized under the patrol system and with good new equipment. Cost is low and the roads are kept in good condition.

In 1930, light road oil was used on the Echo-Butter Creek Market Road with very good results. Oil was also put on the Sunnyside-Umapine market road but results were not so good as part of the road had too much dirt. Lack of binder will probably make it necessary to oil many of the roads.

All work is directed by the County Court: I. M. Schannep, Judge; L. E. Bean and J. O. Hales, Commissioners. L. J. Shannon was County Engineer until his resignation in 1929 and was succeeded by Walter M. Ransom. Mr. Ransom resigned in 1930 and was succeeded by W. E. O. Criger.

STATUS OF MARKET ROAD SYSTEM AS OF OCTOBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement		
		Surfaced With Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Sunnyside-Umapine	7.26	7.26	....	....
2. Havana-Helix	9.14	9.14	....	....
3. Walla Walla River	4.71	4.71	....	....
4. Helix-Reuthers	2.50	2.50	....	....
5. Butter Creek	13.50	13.50	....	....
6. Stanfield-Despain Gulch	4.48	4.48	....	....
7. Weston Mountain	16.30	5.93	....	10.37
8. Pendleton-Cold Springs (Highway)	....	....	....	....
9. Hermiston-Columbia	3.28	3.28	....	....
10. Helix-Vansycle	7.40	7.40	....	....
11. Echo-Stage Gulch	5.47	5.47	....	....
12. Vansycle-Juniper	4.22	4.22	....	....
13. Stone Church-Hopsons	1.03	1.03	....	....
14. Sundquist-State Line	2.68	2.68	....	....
15. Mission South	7.83	7.83	....	....
16. Ferndale	1.32	1.32	....	....
17. Echo-Butter Creek	8.34	8.34	....	....
18. Pine Creek	4.11	....	4.11	....
19. Crockett	1.23	1.23	....	....
20. East Side Road	2.44	2.44	....	....
21. Umapine-State Line	1.61	1.61	....	....
22. Barrett Road	1.71	1.71	....	....
23. East Birch Creek	3.53	3.53	....	....
24. Stanfield-Butter Creek	4.00	....	....	4.00
25. Pendleton-Despain Gulch (Highway)	....	....	....	....
26. South Cold Springs	12.50	6.07	....	6.43
27. Milton-Barrett	2.57	2.57	....	....
28. Adams-Crawford Hollow	3.72	3.72	....	....
29. Adams-Spring Hollow	3.84	3.84	....	....
30. Hermiston-Hinkle	3.31	3.31	....	....
31. Wild Horse	4.86	4.86	....	....
32. Athena-Helix	7.56	2.76	....	4.80
33. Adams-Sand Hollow	4.20	2.17	....	2.03
34. Eagle Creek	4.31	4.31	....	....
35. Adams-Thornhollow	6.44	6.44	....	....
36. Cayuse North	3.00	....	....	3.00
37. North Cold Springs-German Hall	6.05	6.05	....	....
38. Adams West	4.00	....	....	4.00
39. Mission-Thorn Hollow	10.80	....	....	10.80
40. Despain Gulch	10.00	....	7.00	3.00
41. Rieth-Stage Gulch	9.50	....	....	9.50
42. Yokum-Stage Gulch	5.20	2.88	....	2.32
43. Barnhart-Stage Gulch	4.00	....	....	4.00
44. Yokum South	14.00	.11	....	13.89
45. South Reservation	5.00	....	....	5.00
46. Pilot Rock-McKay Creek	3.80	....	....	3.80
47. West Birch Creek	3.91	3.91	....	....
48. Weston-Dry Creek	5.00	4.44	....	.56
49. Spofford Road	6.20	....	....	6.20
50. German Hall-Myrick	5.61	5.61	....	....
51. Winesap Road	3.39	3.39	....	....
52. Weston-Wildhorse	3.00	....	....	3.00
53. Athena-Wayland Station	7.30	5.48	....	1.82
54. Myrick-Reuther Corner	3.04	3.04	....	....
55. Mullenkopf School-North Juniper	6.90	6.90	....	....
56. Gerking Flat-Wayland	8.90	4.46	4.44	....
57. Athena-La Marr Gulch	3.50	....	....	3.50
Total in miles	303.50	185.93	15.55	102.02

Weston Mountain Market Road No. 7

Weston section, 0.45 mile of grading and surfacing. Work done by county forces in September, 1930, from Sta. 0 at City Hall to Sta. 23+68=Sta. 222 of original section (city limit at Sta. 21+68=224). Roadbed, 22 feet; surface, 16 feet by 4 inches. Old surface being scarified and used for base. Cost, $916.79.

Helix-Vansycle Market Road No. 10

Kuper Ranch-Vansycle section, 4.45 miles of grading and surfacing. Work done by county forces between October, 1928, and May, 1929, from Sta. 0 (154+86 at Kuper Ranch=0+00) to Sta. 235+08.6 at Vansycle. Roadbed, 22 feet; surface, 16 feet wide by 7 inches deep. Cost in 1928, $31,435.16; cost in 1929, $14,159.61. Total cost, $45,594.77, of which $32,665.61 was market road, $6,464.58 general road and $6,464.58 was district funds.

Helix-Kuper Ranch section, 2.93 miles of resurfacing. Work done by county forces in 1929 from Sta. 0 at Helix to Sta. 154+86 at Kuper's Ranch. Roadbed, 22 feet; surface, 16 feet wide by 5 inches deep. Cost in 1928 (pro rata charge for moving crusher to job), $1,959.87; cost in 1929, $9,542.44. Total cost, $11,502.31.

Mission South Market Road No. 15

Unit No. 2, 3.97 miles of grading and surfacing. Work done by county forces from August, 1929, to July, 1930, from Sta. 205+52 (0+00 at Highway) to Sta. 415+07. Roadbed, 22 feet. Surface on first mile, 14 feet by 7 inches; on remainder, 9 feet by 7 inches. Cost in 1929, $13,924.29; cost in 1930, $871.55. Total cost, $14,795.75, of which $9,009.17 was market road and $5,696.58 was district funds.

Pendleton-Despain Gulch Market Road No. 25 (Cold Springs Highway)

Old Oregon Trail-North section. County forces in 1929 put on a base course of bar run river gravel. Cost, $8,686.83, general road funds.

South Cold Springs Market Road No. 26

Highway-Bissinger Ranch section, 6.02 miles of grading and surfacing. Work done by county forces in 1929 from Sta. 0 on highway to Sta. 318 at Bissinger's Ranch. Roadbed, 22 feet; surface, 14 feet wide by 7 inches in depth. Cost in 1929, $25,464.15; cost in 1930, $40. Total cost, $25,504.15, of which $17,921.25 was market road, $3,752.20 general road and $3,752.20 district funds. This was a special road district project.

Adams-Thorn Hollow Market Road No. 35

Thorn Hollow section. In 1929 county forces raised the bridge which was moved from an old location in 1927. Gravel bars formed above the bridge and it was necessary to raise the bridge and clear out the channel to allow sufficient waterway. Cost, $2,499.14, general road fund.

North Cold Springs-German Hall Market Road No. 37

Grading and surfacing 6.12 miles from Sta. 0 at Reuther's Corner west of Helix to Sta. 323. Work done by county forces in 1930. Roadbed, 24 feet; surface, 9 feet wide by 7 inches. Cost, $18,399.89, of which $10,552.88 was market road and $7,847.01 district funds. This was a special road district project.

Despain Gulch Market Road No. 40

Grading 7.00 miles from Sta. 0 on the Pendleton-Cold Springs Highway to Sta. 369. In 1929, during a storm the existing road was washed out in many places. A relocation survey was made and the road opened up on the new location with a heavy tractor and blade outfit. This work was only temporary as the grade line was too rolling. Cost in 1929, $5,585.06. This was formed into a special road district for 1930 funds and carried. Late in 1930 county forces will level up the grade and surface. Cost in 1930 to date, $333.35. Total cost, $5,918.14, of which $208.07 was market road, $5,376.99 general road and $333.35 district funds.

Weston-Dry Creek Market Road No. 48

Grading and surfacing 4.44 miles from Sta. 0 where highway diverges from main street of Weston to Sta. 234+23.9. Work done by county forces August to October, 1930. Roadbed 22 feet, surface 9 feet by 7 inches. Cost, $9,916.60, of which $6,545.87 was market road and $3,370.73 district funds. Cost per mile, $2,230. This was a special road district project.

German Hall-Myrick Market Road No. 50

Grading and surfacing 5.61 miles from Sta. 0 at Pendleton-Cold Springs Highway to Sta. 295+96.6 at Myrick. Work done by county forces in 1930. Road bed 24 feet, surface 9 feet wide by 7 inches. Cost, $20,765.77, of which $15,002.99 was market road and $5,762.78 district funds. This was a special road district project.

Athena-Wayland Station Market Road No. 53

Athena-Waterman Station section, 5.48 miles of grading and surfacing. Work done by Joslin & McAllister, contractors, in 1929 from Sta. 0 at Athena to Sta. 289+27. Roadbed 22 feet, surface 16 feet by 7 inches. Cost, $31,382.40. Another project continuing this improvement from Waterman Station to Wayland was done by county forces late in 1930 after close of this report.

Myrick-Reuther Corner Market Road No. 54

Grading and surfacing 3.00 miles from Sta. 290+94 at Myrick to Sta. 449+49 at Reuther Corner. Work done in 1930 by county forces. Roadbed 22 feet, surface 9 feet wide by 7 inches. Cost, $6,034.80.

Mullenkopf School-North Juniper No. 55

Grading and surfacing 6.87 miles from the Mullenkopf School at Sta. 205 on Market Road No. 37 to Sta. 568+50=Sta. 237 at the end of the Vansycle-Juniper Market Road No. 12. Work done by county forces in 1930. Roadbed 22 feet, surface 9 feet wide by 7 inches. Cost, $19,594.51,

Gerking Flat-Wayland Station Market Road No. 56

In 1929, as a special road district project the Gerking Flat Road was graded and surfaced under contract by Joslin & McAllister from Sta. 0=Sta. 143+54.1 of the Athena-Helix Market Road No. 32 to Sta. 235+44. Roadbed 22 feet, surface 16 feet wide by 7 inches. No cost data on file at this time.

In 1930, county forces graded and surfaced from Sta.0=235+44 (end of 1929 project) to Sta. 234+24 at Wayland Sta. Roadbed 22 feet, surface 9 feet by 7 inches. Cost, $5,010.12, of which $802.21 was market road and $4,207.91 general road funds.

UNION COUNTY

Since the Market Road Act took effect in 1920, a total of $718,753.27 has been made available for market roads in Union County, of which $311,542.09 was from the State Market Road appropriation, $379,475.56 from county market road levies and approximately $27,735.62 from co-operative funds such as bonds, district special tax, motor license, general road funds, etc. Of this amount $733,454.64 has been expended and the following work accomplished: 117.71 miles graded; 98.54 miles surfaced; 2.40 miles resurfaced and maintenance during the past six years cost $34,685.05.

During the last two years $151,691.37 has been spent and the following accomplished: 21.18 miles graded; 18.37 miles surfaced; 1.70 miles regraded and widened; 2.40 miles resurfaced and maintenance cost $14,129.60.

STATUS OF MARKET ROAD SYSTEM, AS OF OCTOBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement		
		Surfaced with Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Ladd Canyon-Clover Creek	13.00	2.25	2.95	7.80
2. Union-High Valley	3.70	0.18	0.24	3.28
3. Union-Cove	8.17	8.17	....	....
4. Hilgard-Starkey	17.44	3.49	2.03	11.92
5. North Powder-County Line Bridge	4.80	4.19	....	0.61
6. Union-Medical Springs	18.00	6.00	5.04	6.96
7. Elgin-Palmer Junction	15.00	3.20	....	11.80
8. Telocaset-Medical Springs	14.24	1.06	3.08	10.10
9. Indian Creek	2.13	2.13	....	....
10. Hunter Lane-Pleasant Grove	9.85	9 85	....	....
11. North Powder-Clover Creek	7.03	6.10	....	.93
12. Mt. Glenn	6.16	6.16	....	....
13. Cove-Mill Creek	1.06	1.06	....	....
14. Alicel-Lower Cove	12.00	10.18	....	1.82
15. Pumpkin Ridge	3.50	....	....	3.50
16. Pleasant Grove-Summerville	3.43	0.60	2.83	....
17. Fruitdale-Country Farm	2.22	2.22	....	....
18. Summerville-Dry Creek	3.89	3.89	....	....
19. Wolf Creek	2.78	....	....	2.78
20. Becker Corner-Warm Creek	3.21	3 21	....	....
21. W. B. Hindman	3.98	3.98	....	....
22. Cemetery Cricket Flat	3.37	3.37	....	....
23. Island City-Cove	13.90	13.90	....	....
24. Imbler-Summerville	3.35	3.35	....	....
25. Elgin-Philips Creek	4.50	....	....	4.50
26. Union-Union Junction	1.25	....	....	1.25
27. Imbler-Brooks Corner-Summerville	4.00	....	2.00	2.00
28. Summerville-Pumpkin Ridge School	4.50	....	....	4.50
Total in miles	190.46	98.54	18.17	73.75

Completion of new projects and new units of roads has served to better develop the network of good roads in the Grande Ronde Valley. Principal projects for the two-year period have been around Summerville, on Catherine Creek near Union and the Hilgard-Starkey road. The road organization has continued to improve and is better equipped. The work is done well and cheaply and the standards are good. In the development of the Catherine Creek (Union-Medical Springs) and the Hilgard-Starkey roads, areas between the road and the river should be obtained by purchase, or otherwise, for parks and recreational purposes and the beauty and use of these areas be made perpetual. It is very pleasing to note the good class of grading and surfacing being done on county and district roads by the same organization handling market roads.

The work is under direction of the County Court: U. G. Couch, Judge; W. W. Stevens and W. R. Ledbetter, Commissioners. S. B. Morgan is County Engineer and Roadmaster.

Hilgard-Starkey Market Road No. 4

In 1930, $15,000 was appropriated to grade and surface the impassable parts of this road. It was found that most of these impassable places were on low ground where drainage was poor or on narrow roadbed or hillsides. The alignment was carefully selected and adapted as far as possible to tractor and blade equipment. A wide roadbed has been obtained, even in rocky hillside, at a very low cost. Grading extended from Sta. 182 to Sta. 780. Pit or bar run gravel was put on for base from Sta. 182 (0+00 on Old Oregon Trail Junction) to Sta. 520+40. Total cost, $5,629.75 to October. Work will continue as long as weather conditions are favorable. The work was intermittent as follows: Survey station 182 to Sta. 921+66; Graded Sta. 182 to 272+28 and Sta. 338+58 to 375, 404 to 448, 490-520+41, 625-658, 780-802+50, 810-902+44 surfaced Sta. 175+40-245, 272+28-292, 354-375, 404-448, 490+50-520+42.

North Powder-County Line Bridge Market Road No. 5

In 1930, resurfaced from Sta. 21 (0+00 at highway junction in North Powder) to Sta. 148 with pit run gravel, cost $0.592 per yard in place. Total cost, $1,710.93.

Elgin-Palmer Junction Market Road No. 7

In 1930, county forces rebuilt Gordon Creek Bridge No. 3-06 at the end of the surfaced section of the road, Sta. 170. This is a standard design 30-foot A frame bridge, roadway 18 feet. Cost, $891.89.

Union-Medical Springs Market Road No. 6

In 1928, county forces widened grade and resurfaced from Sta. 0 (at city limit of Union) to Sta. 198+30=30+04 to Sta. 140+70. In 1930, county forces widened the roadbed from Sta. 140+70 to Sta. 240+24=station 399+60 (continuous stationing from Union); estimated cost, $3,222.65. Also county forces graded from Sta. 399+66 to Sta. 475+06 as unit No. 1, estimated cost, $4,490.48, and unit No. 2 from Sta. 475+06 to Sta. 575+10; estimated cost, $8,674.50. Final report on cost is a total of three projects from Sta. 309 to Sta. 575+10 and amounts to $19,122.79, $2,000 of this amount being paid out of the general road fund. Included in the above is $1,159.34 for surfacing with bar run gravel, the soft places in the road so that logging trucks and other traffic can operate all winter. The roadbed width is 22 feet. It is expected that the project will be surfaced in 1931. This completes the road up Catharine Creek to the foot of the hill where the road starts over the summit to Medical Springs with about seven miles yet to grade.

North Powder-Clover Creek Market Road No. 11

In 1927, residents along the route as located suggested a revised route and procured the right of way on it. The route being equally as good as the one located, it was adopted and construction started. In 1927, $1,886.63 was spent; in 1928, $7,338.24; in 1929, $2,762.71 and in 1930, $1,333.02 to raise fills and complete the grading; total cost, $13,320.60, of which $469.95 was in donations for right of way. In 1930, the entire project for Sta. 107+80 to Sta. 323+45 was surfaced with granite sand by county forces; cost, $9,359.56, or $0.911 per cubic yard including about two miles of dead haul. Surfaced 16 feet wide by 8 inches deep except from Sta. 271 to Sta. 303 where the depth is 12 inches.

Mt. Glenn Market Road No. 12

In 1930, county forces redecked (complete) Park Bridge Sta. 0 to Sta. 1+50 at north city limit of La Grande. Cost, $2,192.99.

Alicel-Lower Cove Market Road No. 14

The right of way from Sta. 437+18 to Sta. 472+10 has been in court since 1927. In 1929, right-of-way fence, viewing, etc., cost $818.62. A warrant for $736.70 was issued for damages but was refused. In 1930 work of rebuilding the Walsinger Bridge was started, using plans furnished by the Oregon State Highway Department. The steel was purchased on bids and is being erected by county forces. The bridge consists of one 100-foot pony steel truss and 23-foot and 19-foot approaches. Estimated cost, $11,748.45; spent to date, $4,421.04.

Pumpkin Ridge-Rhinehart Market Road No. 15

In 1930, viewing and surveys cost $38.01.

Pleasant Grove-Summerville Market Road No. 16

In 1929, county forces graded Sta. 783 to Sta. 793 in making channel changes and approaches for a 30-foot A frame bridge at Sta. 787; total cost, $773.99. Survey from Sta. 636+33 to Sta. 817+62; cost, $359.07. In 1930, county forces graded a 22-foot roadbed from Sta. 636 to Sta. 817+62; cost for 1930, $6,651.62. Total cost, two year period, $7,784.68. Work not entirely completed.

In 1930, county forces surfaced from Sta. 787 to Sta. 817+62 using pit run gravel for base 16 feet wide by 10 inches deep, and crushed gravel for top 18 feet wide by 4 inches deep and 16 feet wide by 6 inches deep. Work incomplete at this report; cost, $1,232.78.

Summerville-Dry Creek Market Road No. 18

In 1929, a survey was made from Sta. 186+09.9 the end of the Imbler-Summerville Market Road No. 24 at Summerville, to Sta. 391+31; cost, $154.80. In 1930, surveys were completed and county forces graded a 22-foot roadbed; total cost, $5,364.26. County forces surfaced the above section with base of pit run gravel 16 feet wide by 10 inches deep and top of crushed gravel 18 feet wide by 6 inches deep; cost, $7,450.60.

W. B. Hindman Market Road No. 21

In 1929, county forces graded this road 20 feet wide, from Sta. 0 on the La Grande-Joseph highway to Sta. 174; cost, $14,443.03. Considerable rock was encountered and in other places fill had to be built high on account of drainage. In 1930, county forces surfaced the road 9 feet wide by 10 inches deep; cost, $9,948.77 to date, with a few bills and rental charges yet to come in. Surfaced top and base to Sta. 133 and base only from Sta. 133 to Sta. 160.

Cemetery-Cricket Flat Market Road No. 22

This project from Sta. 0 on the La Grande-Joseph highway to Sta. 172+90 was graded by contract in 1927 and 1928. In 1929, there is an engineering charge for completing maps and records amounting to $167.33. In 1930 county forces surfaced the roadbed 9 feet wide by 10 inches deep. Cost, $11,678.98 to date, with a few bills, etc., still to come in.

Imbler-Brooks Corner-Summerville Market Road No. 27

In 1930, county forces graded a 24-foot roadbed (40 feet between ditches) from Sta. 0 at cross roads at north city limit of Imbler to Sta. 106+09. This work was done with a tractor and blade outfit at a cost of $302.87 per mile, or total cost, $944.94.

WALLOWA COUNTY

Since the Market Road Act took effect in 1920 a total of $508,944.73 has been made available for market roads in Wallowa County, of which $181,731.42 was from the state market road appropriation, $190,166.96 from county market road levies and approximately $137,046.35 from cooperative funds such as bonds, district special, motor license, general road fund, etc. Of this total $502,966 has been expended and the following work accomplished: 106.29 miles graded; 42.67 miles surfaced; 3.36 miles of resurfacing and the last six years maintenance cost, $9,614.63; and cooperation on state and forest highway construction to the extent of $74,877.

During the last two years $110,793.63 has been spent and the following work done: 44.86 miles graded; 22.98 miles surfacing; resurfacing 3.36 miles; and maintenance cost, $4,501.07.

STATUS OF MARKET ROAD SYSTEM AS OF OCTOBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement		
		Surfaced With Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Enterprise-Imnaha	32.00	4.45	7.47	20.08
2. Wallowa-Troy	40.00	6.73	....	33.27
3. Lostine-Evans-Leep	18.04	6.41	9.63	2.00
4. Joseph-Armin	12.00	8.16	....	3.84
5. Halfway-Zumwalt	20.00	....	1.20	18.80
6. Enterprise-Lewis	18.00	....	12.00	6.00
7. Enterprise-Chico	36.00	....	2.20	33.80
8. Enterprise-Alder Slope	5.38	5.38	....	....
9. Enterprise-Hurricane Creek	8.00	4.98	....	3.02
10. Lostine Foothill Road	4.34	4.34	....	....
11. Wallowa-Promise	28.00	4.10	8.88	15.02
12. Wallowa-Leep	10.00	....	....	10.00
13. Wallowa-Evans	4.21	4.21	....	....
14. Wallowa-Diamond Prairie	3.02	3.02	....	....
15. Enterprise-Flora Highway	2.91	2.91	....	....
16. Paradise Extension	1.50	1.50	....	....
17. Lost Prairie	5.62	3.33	1.29	1.00
18. Dobbin	5.27	....	....	5.27
19. Kuhn	1.50	1.50	....	....
20. Beaudoin	4.60	....	....	4.60
21. Liberty	1.85	....	....	1.85
22. Downs	8.33	2.60	....	5.73
Total in miles	270.57	63.62	42.67	164.28

On account of a low tax base and insufficient funds, the arrangement has been continued whereby the people organize districts and donate labor and cash sufficient to grade the road and the county then surfaces the road with market road or other county funds. These districts are now two or three years ahead of the schedule which the county is able to maintain with the funds available. All of the market road fund and nearly all of the county general road fund except for maintenance is used in the above program. In addition to market roads, this plan is followed out on county roads and many miles have been graded and surfaced about 8 or 10 feet wide.

All construction and maintenance work is organized under the county engineer and a very efficient organization has been worked out. Such new equipment as necessary has been acquired and county shops built so this equipment can be accounted for as well as repaired. Construction work is done at a very reasonable cost and surfacing, on account of a portable crusher and numerous sources of gravel, is done very cheaply. Maintenance is well organized and the roads are all well taken care of.

The work is under the direction of the County Court: L. E. Jordan, Judge; Ernest F. Johnson and S. A. Blevins, Commissioners. J. D. Walker is County Engineer and Roadmaster.

In 1929 in order to better serve the county, the County Court designated new roads as follows:

No. 16 Paradise Extention, from the highway to Paradise.
No. 17 Lost Prairie, from Flora to the brakes on Grande Ronde River.
No. 18 Dobbin.
No. 19 Kuhn.
No. 20 Beaudoin.
No. 21 Liberty.

And in 1930, designated, No. 22 Downs Market Road.

Nos. 18, 20, 21 and 22 are in the meadow country northeast of Joseph and is a highly productive section.

Wallowa-Troy Market Road No. 2

Standley Lane section, 0.97 miles of grading and surfacing. Work done by county forces in 1929 and 1930 from Sta. 0 at Wallowa to Sta. 51+37. Roadbed 20 feet. Surface, base 12 feet wide by 8 inches deep, top 12 feet wide by 4 inches deep. Surfacing material used screened talus. Total cost, $2,400.92, of which $2,342.89 was market road and $58.03 general road fund.

Lostine-Evans-Leep Market Road No. 3

Unit No. 2., Sta. 381+04 to Sta. 995+04 on the Enterprise-Flora Highway about ten miles north of Enterprise, 11.63 miles of grading. Surveys were made in 1929, Cost, $578.39. In 1930 grading was started by county forces and is about 85 per cent complete. Roadbed 20 feet. Cost, $15,171.52, of which $651.11 was market road, $5,615.25 general road, and $8,605.16 district funds. Considering amount of material moved and classification, costs were very low.

In 1929, county forces resurfaced from Sta. 0 at Lostine to Sta. 109+60, 1,860 cubic yards of material being used. Cost, $1,633.09.

Joseph-Armin Market Road No. 4

Unit No. 2, 1.36 miles of resurfacing from Sta. 241 (0+00 at Joseph) to Sta. 313. Width 14 feet, new base 8 inches of 2½-inch rock and top 4 inches of 1-inch rock. Surfacing from Sta. 313 to Sta. 414. Width 10 feet. base 8 inches of 2½ inch rock and top 4 inches of 1 inch rock. Work started late in 1929 and completed in 1930 by county forces. Total cost, $9,409.70, of which $6,529.59 was market road, $269.98 bond, $147.57 general road and $2,431.45 district funds. A project was contemplated from Sta. 414 to Sheep Creek for grading and surfacing but funds could not be raised. As the quarry operation at this location was too expensive the resurfacing from Sta. 241 to Joseph will be done from a gravel pit on market road No. 18.

Halfway-Zumwalt Market Road No. 5

Grading Sta. 0 (on Enterprise-Imnaha Market Road No. 1) to Sta. 65. Work done by county forces in 1929 and 1930 and still incomplete. Cost in 1929, $1,249.05; in 1930, $229.75. Total cost, $1,478.80, of which $526.43 was market road, general road $4, bond $176.44, donations $180, county road fund $591.93.

Enterprise-Lewis Market Road No. 6

Unit No. 1, 6.53 miles of grading. Work done by county forces in 1930 from Sta. 0 (Sta. 276+74.6 on Enterprise-Imnaha Market Road No. 1) to Sta. 346. Roadbed 20 feet. Cost, $5,209.99, of which $621.59 was market road, $1,743.26 general road and $2,845.14 district funds; $161.83 was spent in 1929 in surveys.

In 1925, a section 6.6 miles long was graded in with bond funds. Report of expenditure not available. This begins at the end of Unit No. 1 at Sta. 346.

Lostine Foothill Market Road No. 10

4.34 miles of grading and surfacing from Sta. 0 on highway to Sta. 231 on the highway near Lostine. Work done by county forces in 1929 and 1930. Roadbed 18 and 20 feet. Surface 10 and 12 feet wide, base 2½ gravel 8 inches deep, top 1 inch gravel 5 inches deep. Cost, $11,350.02, of which $6,631.99 was market road, county road $3,030.78, donations $1,583 and $104.25 general road fund.

Wallowa-Promise Market Road No. 11

Units No. 2 and 3, 5.68 miles of grading and surfacing. Work done by county forces in 1929 from Sta. 390 to Sta. 561 and in 1930, finishing 1929 section and from Sta. 561 to Sta. 689+00 (0+00 at Wallowa). Cost in 1929, $6,662.11; in 1930, $4,840.22; total cost, $11,502.33, of which $2,397.83 was market road, $22 general road, $5,134.77 district and $3,947.73 county road fund. Some subbase surfacing was put on. This material was dice rock from a railroad ballast pit, loaded with power shovel. In addition to this in 1929, 3.2 miles was graded by power shovel and tractor and blade in three sections between Wallowa and Sta. 393. Work was done with district funds and no cost record is available.

Wallowa-Evans Market Road No. 13

Grading and surfacing, Sta. 0=34+80 on Wallowa Troy Market Road No. 2 (0+00 at Wallowa) to Sta. 226+05=179+13 on Lostine-Evans-Leep Market Road No. 3. Work was started on this project in 1927 and completed in 1930. Roadbed 18 and 20 feet. Surface 12 feet wide, base 8 inches and top 4 inches thick. Expended and reported last biennium, $7,277.15; expended in 1929, $12,058.53. Total cost, $19,335.68, of which $10,718.54 was market road, $1,622.64 general road, $2,959.85 donations and $4,034.65 county road fund.

Enterprise-Flora Market Road No. 15

Highway-Flora section, 2.53 miles of grading and surfacing. Work done by county forces in 1929 from Sta. 20+17 (0+00 on highway) to Sta. 153+89 at Flora. Roadbed, 20 and 22 feet; surface, 10 feet wide, base 8 inches, top 4 inches. Cost, $8,469.02, of which $7,210.49 was market road, $40 general funds, $1,086.48 donations and $147.05 county road fund. In 1927, the county paid for grading and surfacing on forest highway contracts from Sta. 0 at the highway to Sta. 20+16.

Paradise Extention No. 16

Highway North section, 1.50 miles of grading and surfacing. Work done by county forces in 1929 from Sta. 510+16.3 at the end of the Enterprise-Flora Highway to Sta. 589+12. Roadbed, 22 feet; surface, 10 feet wide, base 8 inches, top 4 inches. Cost, $5,133.33, of which $3,575.33 was market road, $25 general road, $405 donations and $1,128 county road fund.

Lost Prairie Market Road No. 17

Flora-North, Unit No. 1, 3.33 miles of grading and surfacing. Work done by county forces in 1929 from Sta. 0 in Flora at the end of Market Road No. 15 to Sta. 175+99. Roadbed, 22 feet; surface, 10 feet wide, base 7 inches, top 3 inches. Cost, $11,708.69, of which $7,557.71 was market road, $25 general fund, $1,466.26 donations and $2,659.72 county road fund.

In 1930, county forces graded from Sta. 175+99 to Sta. 297. Roadbed, 18 feet. Cost, $2,635.24, of which $811.39 was market road, $1,000 donations, $196.71 district and $627.14 county road fund. There remains some work yet to be done on this section.

In 1929 surveys for Unit No. 2 cost $201.89.

Dobbin Market Road No. 18

In 1930, surveys were made, some small amount of grading done and a gravel pit purchased. Cost, $1,831.01, of which $202.89 was market road, $553.24 county road and $1,075.68 district funds.

Kuhn Market Road No. 19

Grading and surfacing from Sta. 589+12 on Market Road No. 16 to Sta. 669+48. Work done by county forces in 1929. Roadbed, 22 feet; surface, 10 feet, base 8 inches, top 4 inches. Cost, $4,665.47, of which $2,578.52 was market road, $20.50 general road, $405 donations and $1,661.45 county road fund.

Beaudoin Market Road No. 20

In 1930, surveys cost $189.74 and a gravel pit for surfacing this road and resurfacing Market Road No. 4 cost $150. Total cost, $339.74, of which $161 was market road, $102.61 general road and $76.13 district funds.

Liberty Market Road No. 21

In 1930, surveys, purchase of gravel pit and small bridges cost $745.59, of which $161 was market road, $225.18 county road and $359.41 district funds.

Downs Market Road No. 22

Surveys and some grader work in 1929 cost $860.64. In 1930 county forces graded and surfaced from Sta. 0 on Joseph-Armin Market Road No. 4 to Sta. 137+15. Roadbed, 20 and 22 feet; surface, 12 feet wide, base 8 inches, top 3 inches. Cost to date, $6,506.04, of which $4,830.62 was market road, $4 general road, $362.18 donations and $1,309.24 county road fund. Surveys were made on Unit No. 2, Sta. 137+15 to Sta. 439+60; cost, $93.75.

WASCO COUNTY

Since the beginning of market road work in 1920, a total of $638,510.12 has been made available for market roads in Wasco County, of which $274,790.01 was from the state market road appropriation, $302.110.44 from county market road levies and approximately $61,609.67 from cooperative funds such as bonds, district special tax, motor license, general road fund, etc. A total of $624.764.13 has been expended and the following work accomplished; 126.33 miles graded; 102.47 miles surfaced; 2.00 miles oiled with heavy oil; 8.06 miles oiled with light oil; and maintenance during the last six years costing $14,287.18.

During the past two-year period $74,750.57 has been spent and the following accomplished: 11.03 miles graded; 7.42 miles surfaced; 2.0 miles oiled; maintenance cost, $6,778.68.

STATUS OF MARKET ROAD SYSTEM, AS OF OCTOBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement				
		Heavy Oil	Light Oil	Surfaced with Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Fifteen Mile Creek (Dufur)	5.25	2.00	....	3.25	....	....
2. Wapinitia	8.76	....	....	8.76	....	....
3. Mill Creek	7.06	....	7.06	....	....	....
4. Wrentham	7.87	....	....	7.87	....	....
5. Roberts-Kuykendall Hill	18.57	....	1.00	17.57	....	....
6. Tygh Ridge	22.00	....	....	8.10	....	13.90
7. Boyd Quarry-South to Dalles Calif. Highway	4.00	....	....	4.00	....	....
8. Boyd Quarry-North to Dalles Calif. Highway	1.51	....	....	1.51	....	....
9. Boyd, East	7.00	....	....	1.08	....	5.92
10. Easton Canyon	7.06	....	....	1.20	5.86	....
11. Long Hollow	8.50	....	....	1.47	....	7.03
12. Warnic	13.00	....	....	10.56	....	2.44
13. Friend	5.25	....	....	5.25	....	....
14. Shaniko-Maupin	28.10	....	....	....	18.00	10.10
15. Wrentham-Roberts	.80	....	....	....	....	.80
16. Shaniko-Antelope-Clarno	23.30	....	....	17.62	....	5.68
17. Rail Hollow	8.00	....	....	4.17	....	3.83
Total in miles	176.03	2.00	8.06	92.41	23.86	49.70

During the last two-year period, Wasco County has contracted the larger grading projects. All the surfacing work is done by county forces. The organization continues to improve year by year with correspondingly better work and lower costs. Maintenance is now well organized and handled under a patrol system with proper equipment. A new shop building and yard has been built for repair and storage of this equipment.

The County Court has graded a number of important county roads on the same standards as used on the market roads; among which are the Cherry Heights, Eight Mile, Dry Hollow, Three Mile and Pleasant Ridge and Petersburg Roads.

The beneficial result of an annual fund which can be counted on year after year and can only be used for construction of major roads, is well shown in this county. The state highways run east and west and north and south through the county. Most of the market roads start from the highways and at this time the various towns and communities off the highways are given access to the highways by a well-constructed rock or graveled road. Advantage has been taken of several pits of excellent surfacing material resulting in very good low-cost roads.

The work is all under direction of the County Court: F. L. Phipps, Judge; L. B. Kelly and E. L. Curtis, until his death, and then Geo. Chamberlain, Commissioners. Christ Fauerso is County Engineer and Roadmaster.

Fifteen Mile Creek (Dufur) Market Road No. 1

In 1929, the road was oiled by state forces for the county, with heavy oil for two miles extending east from Dufur. Cost, $1,007.

Easton Canyon Market Road No. 10

In May, 1930, a contract was awarded to Lair & Co., for grading from Sta. 62+00 (0+00 is 2.47 miles from Boyd Junction on The Dalles-California Highway and diverges from Market Road No. 7 at this point) to Sta. 286+50. In September, 1930, an additional contract was made with the same firm to grade from Sta. 286+50 to Sta. 372+58.3 at the intersection with Market Road No. 6 on the ridge loop road. The county furnished culvert pipe and built the bridges and cattle passes. Roadbed, 24 feet. Cost to date, $21,473.42, of which $1,208.48 was district funds. It will cost about $6,000 to complete the project. This road will be available for a large amount of wheat hauling from along the ridge above the Deschutes River.

Friend Market Road No. 13

Grading and surfacing of this project from Sta. 0+00 on The Dalles-California Highway to Sta. 274+50 at Friend was started in 1928 and $16,970.09 expended. The work was completed in 1929, and cost $34,765.74, of which $9,545.14 was spent for surfacing. Roadbed, 24 feet wide; surfacing, 12 feet wide by 7 inches deep.

Shaniko-Maupin Market Road No. 14

Surveys have been made for a new route for the so-called "Bake Oven" grade out of Maupin. The present grade is nearly all in solid rock and by a relocation a route is obtained in dirt work and very light quantities.

Rail Hollow Market Road No. 17

In July, 1929, a contract for grading was awarded to McNutt Bros., contractors, and completed late in the same year. A county crusher was set up late in 1929 and enough rock put on to carry traffic during the winter. Surfacing operations were completed in 1930. Total cost, $33,069.74, of which $23,018.02 was spent for grading and $10,051.72 for surfacing. All of the funds were market road funds except $443.25 spent for right of way out of the general road fund. The project extends from Sta. 0+00 on the Fifteen Mile or Dufur Market road, about 2 miles from the junction with The Dalles-California Highway just south of Dufur, and extends to Sta. 220+00. Graded 24 feet wide and surfaced 12 feet wide by 7 inches deep. The road is now surfaced to the upper part of the canyon, where roads fork out in several directions. As the road from Friend east to the highway is now completed, there will be no need to continue construction on this road for several years.

WASHINGTON COUNTY

Since the Market Road Act took effect in 1920 a total of $1,379,257.57 has been made available for market roads in Washington County, of which $506,037.80 was from the state market road appropriation, $519,169.24 from county market road levies, and approximately $354,050.53 from cooperative sources such as district special tax, district, motor licenses, O. & C., general road fund, etc. A total of $1,403,817.13 has been expended and the following work accomplished: 150.07 miles graded; 101.23 miles surfaced; 3.88 miles paved; 30.32 miles oiled with heavy oil; 13.57 miles oiled with light oil; and maintenance during the last six years cost $87,645.76.

During the past two years $251,788.83 has been spent and the following accomplished: 34.01 miles graded; 35.68 miles surfaced; 13.57 miles oiled, light; 7.85 miles resurfaced; and maintenance cost $51,439.58.

During the past two years, Washington County has made good progress with its market road program. Gaps have been closed in a number of important roads and many small bridges have been renewed on standards necessary for modern traffic or replaced with culverts. The policy of matching road district special taxes allotted to definite projects with market road funds has continued and while a considerable mileage of road has been built, the overhead for surveys, supervision, movement of equipment is increased. In 1930, the County Court made one road district out of all of the county districts outside of incorporated towns and eliminated about 60 districts. This is in keeping with a modern roadbuilding and maintenance organization where the direction and supply is all from central authority. At a special road district meeting this year, a single special tax was voted almost as large as the total of the specials from the numerous districts. It is felt that this will enable the court to build larger units and materially reduce cost.

On account of a deficit and the diverting of the motor vehicle fund to other roads, there was not sufficient funds to either properly maintain the Gasco surfaced roads or build new surfaces of this type. The older surfaces are badly worn and will soon be gone. As a maintenance plan, for the last two years many roads have been oiled with No. 1 light oil at a cost of $120 to $140 per mile, using about ¼ gallon per square yard. This was done as a dust palliative and to hold the road together for the dry period of summer and it was thought that it would reduce maintenance and wear to that extent. The plan has proven quite successful and popular.

No quarries or gravel pits are in the Tualatin Valley proper but are located in the foothills. Long hauls, sometimes up to 10 or 12 miles are necessary and considerable railroad shipping is done. Until this year a price of 20 cents per yard mile was charged for haul with county trucks and the same amount paid to individual truck operators. This year bids were taken on all hauling jobs and range from 14 to 17 cents per yard mile; average about 15 cents. This has effected a very considerable saving.

Construction and maintenance is quite well organized and well equipped and the county is getting a fine system of good roads at a very reasonable cost and they are well taken care of. Maintenance is organized on the patrol system. Construction work is all done by county forces except that in 1930 several grading jobs were contracted to advantage. Crusher operations in quarries are usually contracted. Especially well organized is the maintenance for the oiled roads as patching. Patrol crews are constantly watching and patching as soon as a hole starts.

STATUS OF MARKET ROAD SYSTEM AS OF OCTOBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement					
		Paved With Bituminous Pavement	Heavy Oil	Light Oil	Surfaced With Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Hillsboro-Scholls-Sherwood	15.40		.79		5.76		8.85
2. Campbell Bridge-Laurel-Midway	3.50		1.72		1.78		
3. Scholls Ferry and River Road	16.30	2.81	2.75		6.74		4.00
4. Campbell Bridge-Beaverton	9.70			4.00	4.95		.75
5. Scholls-Newberg	8.20				5.40		2.80
6. Masonic Home South to County Line	9.30				6.30		3.00
7. Gaston East to Four Corners	.91		.72		.19		
8. Forest Grove-Banks-County Line	21.00	.90	5.46		4.50	1.07	9.07
9. Forest Grove-Gales Creek-County Line	23.50		.40	4.00	18.50		.60
10. Stringtown	4.50	.17			2.88		1.45
11. Thatcher	7.30		1.80		3.68		1.82
12. Hillsboro-North Plains	5.70		4.63	1.07			
13. Hillsboro-Jackson School	5.40		1.86		3.54		
14. Beaverton-Cedar Mill-North Plains	14.00		1.86	2.00	4.64		5.50
15. Mountaindale-North	2.20				1.90		.30
16. Mountaindale-Vodis-North Plains	3.80				3.80		
17. Scoggin Creek	4.60				4.60		
18. Mountaindale-Christie-Banks	4.50				2.62		1.88
19. Patton Valley	5.00		1.59		3.41		
20. Cornelius-Schefflin-Starkey Corner	5.70			.50	4.70		.50
21. Cornelius South	3.00		1.44	1.00			.56
22. Hillsboro-Orenco-Cornelius Pass	9.80		1.30		5.00		3.50
23. Beaverton-Tigard	4.30		.65		.80		2.85
24. Boones Ferry	5.50		2.21		2.37		.92
25. Tualatin-West Side Highway	3.00			1.00	1.31		.69
26. Reedville-Orenco	3.00		1.14		1.86		
Total in miles	199.11	3.88	30.32	13.57	101.23	1.07	49.04

The work is under direction of the County Court: E. J. Ward, Judge; F. W. Livermore and J. M. Hiatt, commissioners. I. A. DeFrance was County Engineer in 1929 and was succeeded in 1930 by J. W. Barney.

Hillsboro-Scholls-Sherwood Market Road No. 1

In 1929, county forces widened the grade, trenched and built shoulders along both sides of the old penetration pavement from the south end of the Jackson Bottom fill, south for 1½ miles, using 1½-inch base and 1-inch top of crushed rock. Cost for grading, $258.76; for surfacing, $1,708.18; total cost, $1,966.94. County forces graded and surfaced from Sta. 102+25 at junction with Market Road No. 2 to Sta. 195 at Bonner Bridge. Width of roadbed, 22 feet; surface, 16 feet wide by 4 inches deep. Cost, $8,099.88, of which $6,410.79 was market road, $1,639.09 was district fund and $50 was donated. In 1930, the cuts at the approaches were cut back for sight clearance and a few bents at each end of Campbell Bridge filled. Much of the danger at this place has been eliminated. Cost, $729.93, of which $418.95 was market road and $310.98 was district funds.

Campbell Bridge-Laurel-Midway Market Road No. 2

In 1929, county forces widened the existing roadbed to 22 feet, and resurfaced to a 16-foot width from Sta. 30 (0+00 at Laurel) to Sta. 79+33. Cost, $316.20, district funds.

Scholls Ferry and River Road Market Road No. 3

Progress to Robinson Station section, 0.34 mile of grading and surfacing, Sta. 0 at Progress to Sta. 32+90 at Robinson Station. Roadbed width, 22 feet; surface, 16 feet; the roadbed along the old 12-foot penetration pavement was widened to 22 feet and a shoulder built on each side of the pavement. Work started in 1927 and $676.23 spent; in 1928, $676.23 spent. Completed in 1929. Cost, $798.16, market road fund.

Caldwell Hill section, 2.35 miles of grade widening and resurfacing a section graded in 1923 and surfaced in 1924. Widened to a 22-foot roadbed and a 16-foot surface. Work done by county forces. Cost in 1928, $792.18, district funds; cost in 1929, $4,271.70, market road funds. Total cost, $5,063.83.

Progress-Whitford section, 1.16 miles of grade widening and rock shoulders, Sta. 97 to Sta. 157+80. Widened grade to 28 feet and built rock shoulders along 12-foot penetration pavement. Work done by county forces. Cost, $2,362.02, $918.11 being market road and $1,443.91 district funds.

County line section, 0.17 mile of grading and surfacing. Work done by county forces from Sta. 18+50 (0+00 at Multnomah County line) to Sta. 27+50 on Bertha-Beaverton Highway. Roadbed, 24 feet; surface, 16 feet by 6 inches. Cost, $1,321.73, of which $840.42 was market road and $481.31 was district fund. In 1930, county forces graded from Sta. 0 to Sta. 18+50 and resurfaced to Sta. 27+50. Work incomplete but cost to date $681.55, district fund.

Robinson Station-West, 1.61 miles of grade widening and shoulder construction. In 1929, county forces widened the roadbed to 30 feet and built rock shoulders along the 12-foot penetration pavement from Sta. 30 (0+00 at Progress) to Sta. 115. Cost, $3,445.41, of which $2,001.50 was market road and $1,443.91 was district road fund.

River Road-Farmington section, 2.91 miles of grading and surfacing. Work done by county forces in 1929 from Sta. 190+50 to Sta. 244. Roadbed, 22 feet; surface, 16 feet by 4 inches. Cost, $4,378.33, of which $3,231.95 was market road and $1,146.35 district road fund.

Rock Creek Bridge section, 0.42 miles of grading, surfacing and bridge construction. Bridge from Sta. 12+70 to Sta. 14+20 and grading from Sta. 0 to Sta. 22 was done by O. N. Pierce, contractor. Surfacing was done by county forces. Total cost to date, $4,552.32, of which $1,152.57 was market road and $3,399.75 district road fund. The project is not completed at this date. Estimated cost, $6,535.10.

Whitford-Highway section, preliminary survey in 1930. Cost, $261.44.

Campbell Bridge-Beaverton Market Road No. 4

Farmington bridge, steel span over Tualatin River. Scrape, paint, etc., in 1929. Cost, $261.21.

Farmington East to District Line section, 1.04 miles of grading and surfacing, Sta. 163+50 to Sta. 218+50. Work done by county forces in 1930. Cost, $3,404.16, of which $1,200.59 was market road and $2,203.57 was district funds.

Scholls-Newberg Market Road No. 5

Rodgers Farm-Johnson Ranch section, completion of grading started in 1927. Work done by county forces in 1929; roadbed, 24 feet. Total cost, $2,296.73, $1,029.04 being spent to complete the project in 1929.

Scholls Bridge to Groner Corner, 0.51 mile of regrading and resurfacing, Sta. 58 to Sta. 85 at Groner Corner. Work done by county forces in 1929. Cost, $820.15, of which $338.83 was market road and $481.32 was district funds.

Rowell Cut-off section, 0.17 mile of grading and surfacing from Sta. 9+50 (0+00 at Baker Creek) to Sta. 18+50. This was a short section which eliminated some bad curvature and the right of way was donated provided that the improvement was made at once. Work done by county forces in 1929. Roadbed, 22 feet; surface, 16 feet by 8 inches. Cost, $603.41.

Scholls Bridge section, new bridge and 0.38 mile of grading and surfacing. A 100-foot steel pony truss was built by the Clackamas Construction Co. from Sta. 51+48 to Sta. 56+31.5. Started in 1929 and completed in 1930. Cost, $10,377.26. Approaches from Sta. 38 (0+00 at Baker Creek) to Sta. 58 were graded by Joplin and Eldon. Surfacing was done by county forces. Cost of grading and surfacing, $3,604.74.

Scholls section, 0.37 mile of grading and surfacing from Sta. 18+50 (0+00 at Baker Creek) to Sta. 38. Work done by county forces in 1930. Roadbed, 22 feet; surface, 16 feet by 4 inches. Cost, $1,070.05, of which $557.02 was market road and $513.03 district funds.

Mt. Side Cemetery-South section, 1.21 miles of grading and surfacing from Sta. 48 (0+00 at Baker Creek) to Sta. 102. Grading done by contract by Joplin & Eldon; surfacing by county forces. Roadbed, 22 feet; surface, 16 feet by 8 inches. Cost, $5,674.25, of which $4,474.25 was market road and $1,200 district funds.

Mason's Home South to County Line, Market Road No. 6

Spring Hill section, 0.80 mile of regrading and resurfacing from Sta. 99+50 to Sta. 142. Work done by county forces in 1929. Roadbed, 22 feet; surface, 16 feet. Cost, $2,747.92, of which $1,830.16 was market road and $917.76 district funds. In 1929 county forces completed a section of regrading and resurfacing work started in 1928, from Sta. 75 to Sta. 99+50. Roadbed, 22 feet; surface, 16 feet by 4 inches. Total cost, $1,404.29, $955.75 of market road fund spent in 1930, and $448.54 of district funds spent in 1928.

Walters Ranch-Laurelwood School, 0.21 mile of grading and surfacing. Work done by county forces in 1929 from Sta. 147+50 to Sta. 159. Roadbed, 22 feet; surface, 16 feet by 6 inches. Cost, $1,433.41, of which $503.16 was market road and $930.25 district funds. In 1929 a bridge and approach were built from Sta. 83+42 to Sta. 83+57. Cost, $674.54. In 1930 county forces graded and surfaced from Sta. 119 to Sta. 147+50. Roadbed, 22 feet; surface, 16 feet by 8 inches. Cost, $1,547.43, of which $571.30 was market road and $976.13 district funds.

Forest Grove-Banks-County Line Market Road No. 8

Buxton-Cummings Hill section, 0.93 mile of grading and surfacing. Work done by county forces in 1929 from Sta. 34 (0+00 at foot of hill) to Sta. 83 (80+00 opposite Buxton depot). Roadbed, 22 feet; surface, 16 feet by 8 inches. Cost, $6,980.72, of which $5,529.54 was market road and $1,451.18 district funds. In 1930 the section from Sta. 7+80 to Sta. 34, 0.50 mile, was graded by Joplin & Eldon. Roadbed, 22 feet. Cost, $3,492.18, of which $2,123.98 was market road and $1,368.20 district funds. The same section or Westcott section from Sta. 0 to Sta. 34 was surfaced by county forces, 12 feet wide by 4 nches deep. Cost, $1,376.01.

Schmedlin-Columbia County line section, 1.11 miles of grading and 0.92 mile of surfacing. Graded by Treharne, Condit and Parker in 1929 from Sta. 0 at the Columbia County line to Sta. 58+70. Roadbed, 22 feet. County forces surfaced from Sta. 0 to Sta. 49, 8 feet wide by 4 inches deep. Cost to grade and surface, $9,811.14, of which $8,359.96 was market road and $1,451.18 district funds. In 1930 county forces surfaced from Sta. 0 to Sta. 57+50, 8 feet wide by 5 inches deep. Cost, $1,497.95, of which $129.75 was market road and $1,368.20 district funds.

Banks-Manning section, 0.63 mile of grading and surfacing. Work done by county forces from Sta. 26+30 at north city limit of Banks to Sta. 69+60 in 1929. Roadbed, 22 feet; surface, 16 feet by 8 inches. Cost, $3,405.13, of which $2,850.15 was market road and $554.98 district funds.

Buxton-Manning section. In 1929 the road district voted a special tax for the purpose of purchasing right of way on the west side of the two railroad tracks from Banks and Manning to Buxton. Surveys were made a few years ago but opposition always developed. The present road crosses the tracks several times and has bad alignment. Resolution proceedings were started but so much opposition developed that the project was dropped and the money turned back to the district fund; $161.88 of market road funds were spent on surveys, etc.

Cummings Hill section. A resurvey was made in 1930. Cost, $602.11.

Summit to Beaver Creek section. In 1930 a new survey was made. Cost, $814.27.

Forest Grove-Gales Creek-County Line Market Road No. 9

County Line section, grading and surfacing. County forces completed grading and surfacing, the 1928 project, from Sta. 155+40 to Sta. 286 at the Columbia County line. Cost in 1930, $1,805.18, market road fund. Total cost, $30,028.92, of which $9,984.91 was market road and $20,034.11 district funds.

Unit No. 1, Forest Grove-United Railway section, grading and surfacing. Work done in 1928 and 1929 from Sta. 0 at end of pavement near Forest Grove to Sta. 211+20. Roadbed, 22 feet; surface, 18 feet by 6 inches. Cost in 1929 to complete, $3,229.36, market road fund. Total cost, $28,203.43, of which $17,255.51 was market road and $10,947.92 district funds.

Unit No. 2, Forest Grove-United Railway section, 2.88 miles of grading and surfacing. Work done by county forces in 1929 from Sta. 330 (0+00 at end of pavement north of Forest Grove) to Sta. 482. Roadbed, 22 and 24 feet; surface, 16 feet by 6 inches. Cost, $10,613.92, of which $3,942.88 was market road and $6,671.04 district funds.

Washburn section, 1.34 miles of grading and surfacing. Work done by county forces in 1930 from Sta. 450 (0+00 at end of pavement near Forest Grove) to Sta. 521. Roadbed, 24 feet; surface, 16 feet by 4 inches and such additional depth as needed. Cost, $5,757.07, of which $3,080.09 was market road and $2,676.98 district funds.

Gales City section, 0.07 mile of grading and surfacing. Work done by county forces in 1930 from Sta. 0 to Sta. 3+80 at the north end of the Gales City bridge. Cost, $608.15, of which $301.15 was market road and $307 general road fund. This project involved moving the store building at Gales City at a cost of $307, which building was built to exact lines of the property. This dangerous condition has now been eliminated.

Stringtown Market Road No. 10

Grading and surfacing 0.17 mile from Sta. 83 to Sta. 92. Work done by county forces in 1930. Roadbed, 22 feet; surface, 16 feet by 4 inches and base as necessary. Cost, $581.85, of which $244.98 was market road and $336.87 district funds.

Watts School-Bridge section, 0.17 mile of grading and surfacing. Work done by county forces in 1929 from Sta. 0 at Watts School on the Gales Creek Market Road No. 9 to Sta. 9. Roadbed, 22 feet; surface, 16 feet by 5 inches. The improvement included the installation of a bridge at Sta. 4 at a cost of $1,621.86. Total cost, $2,029.70.

Grading and surfacing Sta. 66 to Sta. 84, 0.34 mile. Work done by county forces in 1929. Roadbed, 22 feet; surface, 16 feet by 5 inches. Cost, $1,894.79, of which $1,356.87 was market road and $537.92 district funds.

Thatcher Market Road No. 11

Grading and surfacing, 0.28 mile. Work done by county forces in 1929 from Sta. 254 (0+00 at end of pavement near Forest Grove) to Sta. 269. Roadbed, 22 feet; surface 16 feet by 8 inches. Cost, $989.53, of which $447.88 was market road and $541.65 district funds.

Kansas City Bridge. Sta. 282+50.8 (0+00 at end of pavement near Forest Grove) to Sta. 283+26.8, four 19-foot spans 18 feet wide, class B loading. Built by county forces in 1929. Cost, $549.74.

Kansas City-East, 0.34 mile of grading and surfacing. Work done by county forces in 1930 from Sta. 268 to Sta. 286. Roadbed, 22 feet; surface, 16 feet wide by 4 inches deep and base as necessary. Cost, $1,998.41, of which $1,131.16 was market road and $867.25 district funds.

Hillsboro-Jackson School Market Road No. 13

Rose Bridge section, 0.61 mile of grading and surfacing. Work done by county forces in 1929 from Sta. 136 (0+00 at Hillsboro city limit) to Sta. 168+16. Roadbed, 22 feet; surface, 16 feet by 6 inches. Cost, $2,316.01, of which $1,811.01 was market road and $505 district funds.

Beaverton-Cedar Mills-North Plains Market Road No. 14

Barnes School-Walker Corner, 0.38 mile of grading and surfacing. Work done by county forces in 1929 from Sta. 76 to Sta. 96. Roadbed, 24 feet; surface, 16 feet by 8 inches. Cost, $2,494.38, of which $1,637.57 was market road and $856.81 district funds.

Connell Farm-East, 1.93 miles of grading and surfacing. Work done by county forces in 1929 from Sta. 117 to Sta. 186+50 (0+00 at Glencoe). Roadbed, 22 feet; surface, 16 feet by 2 inches and base as necessary. Cost, $4,297.31, of which $2,533.03 was market road and $1,764.28 district funds. In 1930 county forces graded and surfaced from Sta. 186+50 to Sta. 219. Cost, $1,925.20, of which $396.69 was market road and $1,528.51 district funds.

In 1929 county forces installed a small bridge one-half mile north of Beaverton. Cost, $213.40. Seventeen-foot span pile trestle.

Section east of Bethany, 1.00 mile of grading and surfacing. Work done by county forces in 1930 from Sta. 263+50 to Sta. 315. Roadbed, 22 feet; surface, 16 feet by 4 inches. Cost, $4,295.41, of which $1,968.15 was market road and $2,327.26 district funds.

Walker Cut-off survey only. Cost, $79.27.

Mountaindale-North Market Road No. 15

Mountaindale-North section, 0.61 mile of grading and surfacing. Work done by county forces in 1929 from Sta. 54 (0+00 at Mountaindale) to Sta. 86. Roadbed 22 feet, surface 16 feet by 4 inches and base where necessary. Cost, $776.13, of which $355.37 was market road and $420.76 was district funds. In 1930 0.21 miles of grading and surfacing from Sta. 86 to Sta. 98. Cost, $1,421.93, of which $891.45 was market road and $530.48 was district funds.

[WASHINGTON]

Mountaindale-Vadis-North Plains Market Road No. 16

Rafferty Bridge-District Line setcion, 0.34 mile of grading and surfacing. Work done by county forces in 1929 from Sta. 34 (0+00 at Mountaindale) to Sta. 52. Roadbed 22 feet, surface 16 feet. Cost, $1,172.45, of which $751.70 was market road and $420.75 was district funds.

Meek Corner section, 0.81 miles of grading and surfacing. Work done in 1930 by county forces from Sta. 117 (0+00 at Mountaindale) to Sta. 160. Roadbed 22 feet, surface 16 feet by 4 inches. Cost, $3,852.85, of which $2,614.29 was market road, $300 district and $938.56 district special funds.

Scoggin Creek Market Road No. 17

Grading and surfacing from Sta. 130 to Sta. 267. Work done by county forces in 1929. Roadbed 22 feet, surface 16 feet. Cost, $5,030.09, of which $3,094.87 was market road and $1,935.22 district funds.

Mountaindale-Christie-Banks Market Road No. 18

Christie-Mountaindale section, 0.50 of grading and resurfacing. Work done by county forces from Sta. 113 (0+00 on Forest Grove-Banks Road) to Sta. 138. Work done by county forces in 1929. Roadbed 22 feet, surface 16 feet. Cost, $1,466.76, of which $830.34 was market road and $636.40 district funds. In 1930 county forces graded and surfaced from Sta. 138 to Sta. 158. Roadbed 22 feet, surface 16 feet by 4 inches. Cost, $2,012.33, of which $1,149.13 was market road and $863.20 district funds. In 1930 county forces graded and surfaced from Mountaindale West Sta. 241+50 (0+00 on Forest Grove-Banks Road, to Sta. 251+50. Cost, $608.29, of which $77.80 was market road and $530.49 district funds.

Patton Valley Market Road No. 19

Cherry Grove section, 1.37 miles of grading and surfacing. Work done in 1929 by county forces from Sta. 195+50 (0+00 on highway near Gaston) to Sta. 267. Roadbed 22 feet, surface 16 feet by 4 inches and base as necessary. Cost, $3,535.72, of which $174.47 was market road and $3,361.25 district funds. Additional surfacing put on in 1930 by county forces using Durham gravel; cost, $1,200.74, district fund. In 1930 county forces partially graded from Sta. 263 to Sta. 279. Roadbed 22 feet. Cost, $707.35, of which $430.77 was market road and $276.58 district funds.

Cornelius-Schefflin-Starkey Corner Market Road No. 20

Schefflin-East section, 0.76 mile of grading and surfacing. Work done by county forces in 1929 from Sta. 73 to Sta. 113. Roadbed 22 feet, surface 16 feet by 4 inches. Cost $3,437.15, of which $2,184 was market road and $1,253.15 district funds.

Centerville Bridge section, 0.34 mile of grading and surfacing. Work done by county forces in 1929 from Sta. 58 to Sta. 76. Roadbed 22 feet, surface 16 feet by 8 inches. Cost, $6,976.55.

Centerville-South section, 0.55 mile of grading and surfacing. Work done by county forces in 1930 from Sta. 76 to Sta. 105. Roadbed 22 feet, surface 16 feet by 4 inches. Cost, $1,467.08, of which $777.58 was market road and $689.50, district funds.

Cornelius South Market Road No. 21

In 1929 county forces redecked bridge near the Golf Club. Cost, $636.70.

In 1930 surveys for relocation of the bridge over Tualatin river. Cost, $44.40.

Hillsboro-Orenco-Cornelius Pass Market Road No. 22

Lyons Corner section, 0.43 mile of grading and surfacing. Work done by county forces in 1929 from Sta. 75 (0+00 at Hillsboro) to Sta. 98. Roadbed 22 feet, surface 16 feet by 8 inches. Cost, $1,274.92.

Hawthorn Farm-Orenco section, 1.25 miles of grading and surfacing. Work done by county forces in 1929 from Sta. 150 (0+00 at Hillsboro) to Sta. 216+12. Roadbed 22 feet, surface 16 feet by 4 inches and base where needed. Cost, $4,346.14.

Cornelius Pass section, 0.77 mile of grading. Work done by county forces in 1929 from Sta. 200+54 to Sta. 228+71 and from Sta. 239+27 to Sta. 252. Roadbed 22 feet. Cost, $10,400, of which $8,893.33 was market road and $1,506.67 district funds. In 1930 county forces surfaced from Sta. 213 to Sta. 248, surface 16 feet by 4 inches. Also included grading from Sta. 228+71 to Sta. 239. Total cost for 1930, $2,331.63, of which $1,574.41 was market road and $757.22 district funds. In 1929 county forces put on base surfacing from Sta. 212 to Sta. 252; cost, $2,072.02.

Cornelius Pass-South section, 1.00 mile of grading and surfacing. Work done in 1930 by county forces from Sta. 252 to Sta. 304. Roadbed 22 feet, surface 16 feet by 8 inches. Cost, $5,029.10, of which $2,583.57 was market road and $2,445.53 district funds.

Beaverton-Tigard Market Road No. 23

For several years improvement has been held up on account of opposition to various routes selected. In 1930, a route was selected to run through Progress with an undergrade crossing at Fanno on the Southern Pacific Railroad and running east and crossing under the Oregon Electric Railway just north of Metzger.

Fanno-West section, 0.79 mile of grading. Work done by county forces in 1930 from Sta. 35 to Sta. 76+50 (0+00 at end of pevement at city limit of Beaverton). Roadbed 24 feet. Cost to date, $2,429.72, of which $600.47 was market road and $1,829.25 district funds.

Boone's Ferry Market Road No. 24

Tualatin Bridge near Tualatin, Sta. 19 to Sta. 21+68 county forces scraped and painted this bridge, and repaired the deck and approaches in 1929. Cost, $1,954.99.

Grading and surfacing by county forces in 1929 from Sta. 134 to Sta. 162, 0.53 mile. Cost, $1,458.16, of which $879.49 was market road and $578.67 district funds.

Section Sta. 97 to Sta. 134 staked for construction in 1930 but the project was postponed. Cost, $50.20.

Tualatin-West Side Highway Market Road No. 25

Highway East section, 1.31 miles of regrading and resurfacing. Work done by county forces in 1929 from Sta. 0 at the highway to Sta. 69. Cost, $3,912.31, of which $2,662.31 was market road, $450 district funds and donations of $800.

In 1930 surveys were made for the Tualatin-Meridian Line section. Cost, $105.60.

Reedville-Orenco Market Road No. 26

Reedville-North section, 0.41 mile of grading and surfacing. Work done by county forces in 1929 from Sta. 60 (0+00 at highway at Reedville) to Sta. 82. Roadbed 22 feet, surface 16 feet by 8 inches. Cost, $2,342.88, of which $1,328.27 was market road and $1,014.61 district funds.

In 1930, county forces graded and surfaced from Sta. 82 to Sta. 98, 0.30 mile. Roadbed 22 feet, surface 16 feet by 8 inches. Cost, $2,959.48 of which $1,690.63 was market road and $1,268.85 district funds.

WHEELER COUNTY

Since the Market Road Act took effect in 1920 a total of $200,797.90 has been made available for market roads in Wheeler County, of which $73,282.42 was from the state market road appropriatioin, $84,515.48 from county market road levies and approximately $43,000 from cooperative funds such as bonds, district, motor license, general road fund, etc. Of this total, $200,169.43 has been expended and the following work accomplished: 17.67 miles graded; 15.07 miles surfaced; maintenance for the six-year period costing $3,403.88 and cooperation on state highways to the extent of $19,623.

During the last two years $32,660.86 has been spent and the following accomplished: 3.77 miles graded; 3.77 miles surfaced; maintenance costing $1,394.21 and cooperation on the Heppner-Spray Forest Highway $10,000.

Contract work has been discontinued as it was necessary for the county to equip itself with proper machinery for maintenance and widening work, and county forces with this equipment do all the grading and surfacing. This equipment consists of two tractor and blade outfits, air compressor, scarifier and revolving fresnoes. Very good work is being done cheaply and to a standard in keeping with volume of traffic and finances. The general road conditions have improved greatly since this equipment was secured and costs are no greater.

The work is all under the direction of the County Court: W. W. Hoover, Judge; R. E. Wright and C. A. Cole, Commissioners. J. R. Mitchell, Resident Engineer for the State Highway Department and located at Condon, is acting as County Engineer on a part-time basis. G. E. Peck, County Surveyor, is making surveys, etc., as assistant to Mr. Mitchell.

STATUS OF MARKET ROAD SYSTEM, AS OF OCTOBER 1, 1930

Number and Name	Miles Length in	Classification as to Improvement		
		Surfaced with Rock or Gravel	Graded to Market Road Standards	Not Graded to Market Road Standards
1. Service Creek-Mitchell	26.00	10.07	0.60	15.33
2. Cottonwood Creek	6.00	5.00	---------	1.00
3. Pine Creek	21.00	---------	2.00	19.00
4. Winlock-Spray	---------	---------	---------	---------
5. Haystack Creek (Heppner-Spray Forest Road)	---------	---------	---------	---------
Total in miles	53.00	15.07	2.60	35.33

Service Creek-Mitchell Market Road No. 1

In 1930, county forces graded and surfaced a section from Sta. 0+00 at the top of the grade just north of Mitchell to Sta. 212 at the Keyes Place. The new route abandons the present road and very good alignment and quite cheap work is obtained. Water spout wash material is being put on 16 feet wide by 6 inches deep. To date $8,000 has been spent.

Pine Creek Market Road No. 3

In 1929, $245.63 was paid to McNutt Bros. as final payment on their contract to grade 2.2 miles from Sta. 7+00 at the junction with Cottonwood Market Road No. 2 to the summit at Sta. 114+63.3, in 1928. This brings the total cost to $18,691.64. From the summit west from Sta. 114+63.3 a new route has been selected on the south side of the canyon instead of the north side. This is adapted to the county's equipment and will be very much cheaper to build.

Haystack Creek (Heppner-Spray Forest Highway) Market Road No. 5

This project from the highway to the summit 6.3 miles was surfaced in 1929 under a contract let by the Bureau of Public Roads. A payment of $10,000 out of market road funds was made to the bureau in 1929 as the county's cooperation on this project.

YAMHILL COUNTY

Beginning with the year 1920, a total of $703,728.60 has been made available for market roads in Yamhill County, of which $345,002.24 was from the state market road appropriation, $341,288.57, from county market road levies and approximately $17,497.79 from county cooperative funds, such as bonds, special district levies, general road funds, motor license funds, etc. Of this amount $684,213.44 has been expended and the following work accomplished: 100.36 miles graded; 105.24 miles surfaced; 8.73 miles resurfaced; 0.53 miles paved; and maintenance during the last six years costing $17,261.27.

During the past two years, $106,435.97, has been expended and the following accomplished: 12.81 miles graded; 17.18 miles surfaced; 8.73 miles resurfaced; and an average of 120 miles maintained.

STATUS OF MARKET ROAD SYSTEM AS OF NOVEMBER 1, 1930

Number and Name	Length in Miles	Classification as to Improvement			
		Paved With Bituminous Pavement	Paved With Concrete Pavement	Rock or Gravel Surfacing	Not Graded to Market Road Standards
1. Yamhill-Newberg	10.50	....	....	10.50	....
2. Moores Valley-Carlton	7.10	....	....	6.80	.30
3. Gopher Valley	8.75	....	....	8.75	....
4. Wapato-North and South	11.60	....	....	9.05	2.55
5. Butteville-Springbrook	7.95	....	....	6.05	1.90
6. Amity-Hopewell-County Line	8.00	....	....	5.87	2.13
7. Gerrish Valley	6.95	....	....	5.74	1.21
8. Rock Creek	4.56	....	....	4.40	.16
9. Baker Creek	6.45	....	....	6.07	.38
10. Willamina-Coast Fork	5.89	....	....	5.79	.10
11. Lafayette, North	5.20	....	....	2.17	3.03
12. Dundee, West	.79	....	....	.79	....
13. Sheridan-Mill Creek	2.38	....	....	2.38	....
14. Yamhill-Moores Valley	8.40	....	....	5.92	2.48
15. Amity, West	7.92	....	....	.81	7.11
16. Dayton-Wallace Road	10.70	....	....	9.29	1.41
17. Newberg-Woodburn	.53	.50	....	....	.03
18. Lafayette, South	8.30	....	....	2.82	5.48
19. Muddy Creek	1.67	....	....	1.47	.20
20. Pike	3.40	....	....	.64	2.76
21. McMinnville, North	5.50	....	....	5.50	....
22. Chehalem Mountain	4.70	....	....	2.98	1.72
23. Red Prairie	.98	....	....	.98	....
24. Sheridan, South	2.92	....	....	2.92	....
25. Bellevue-Ballston	1.85	....	....	1.85	....
26. Three Mile Lane	7.00	....	7.00	....	....
27. Star Mill	1.44	....	....	.48	.96
28. Bellevue-Delashmut Corners	5.45	....	....	5.45	....
29. Grand Island	1.79	....	....	.32	1.47
30. Sunny Crest	1.70	....	....	1.38	.32
31. Buck Hollow	1.50	....	....	....	1.50
Total in miles	161.87	.50	7.00	117.17	37.20

Five new market roads were added to the Yamhill Market Road System during 1929 and 1930. A road known as the Star Mill extending one and one-half miles west of McMinnville. A road from Bellevue east and north of McMinnville-Tillamook highway. Grand Island road from Unionvale east to the center of Grand Island. Sunny Crest road from west city limits of Newberg to Sunny Crest. Buck Hollow road joining Market Roads 8 and 10, north of Willamina. Construction was started on several of these new roads during the past two years.

The construction work during the past two years was widely distributed over the system and a number of short sections needing improvement were worked upon. Bridges over the North Yamhill River at Carlton and at Dayton were redecked and new trestle approaches constructed. The bridge over the slough to Grand Island was redecked and new trestle approaches built. Also a new trestle of approximately 300 feet was constructed over Snider Creek at Dayton. 8.73 miles were resurfaced on sections that were becoming badly worn.

Maintenance work in general has been good and for the most part both construction and maintenance has been performed by county forces.

Mr. H. W. Herring, County Engineer, has been in charge of the market road work under the direction of County Judge F. B. Sackett and County Commissioner W. S. Allan and Frank D. Sawyer.

Yamhill-Newberg Market Road No. 1

Newberg-Yamhill section, from west city limits of Newberg to 1.5 miles west intersection of Market Road No. 4. 1.5 miles, ditching, grade widening and resurfacing. Work by county forces; begun May 1, 1930; incomplete November 1, 1930. Expended to November 1, 1930, $2,450.05. The old surface had become very rough and ditches needed to be deepened.

Moore's Valley-Carlton Market Road No. 2

Carl's Corner-Smith Forks, Panther Creek, bridges and Panther Creek road intersection culvert and resurface. 39 lineal feet timber trestle, 1,000 feet resurfacing. Work by county forces; bridges begun August, 1929; completed September, 1929; cost $1,374.11. Culvert and resurfacing; county forces, begun July, 1930. Expended to November 1, 1930, $142.66; estimated cost, $1,390.

North Yamhill River bridge at west city limits of Carlton, Sta. 214+80.6 to Sta. 218+52.8. Rebuilding 249.5 feet of pile trestle and redecking 122.5 feet steel span. Work by county forces; begun September 22, 1930. Expended to November 1, 1930, $1,813.90. Estimated cost, $4,373.56.

Gopher Valley Market Road No. 3

Casy Shed-North End section, 1.4 miles grading and surfacing, Sta. 0 to Sta. 74; roadbed width 18 feet, surface 12 feet wide, 8 inches depth. Grading work by donation, surfacing by county forces. Work begun October, 1929; completed September, 1930; cost, $3,000.23.

Butteville-Springbrook Market Road No. 5

West Side Pacific Highway-Parrish Hill section, 0.80 mile, grading and surfacing; Sta. 0 to Sta. 77, several curves, constructed to better alignment. Work by county forces; begun August 1, 1929; completed October 1, 1929. Total cost, $2,976.16.

Abernathy Lane-Silwood Farm, 2 miles regrade and resurface; Sta. 77 to Sta. 183. Roadbed widened to 26 feet; surfacing 18 feet wide, 6 inches depth. Work by county forces; begun August 1, 1929; completed September 1, 1930. Total cost, $6,448.26.

Amity-Hopewell Market Road No. 6

Walnut Hill Road section, 0.81 mile grading and surfacing, Sta. 0 to Sta. 43. Roadbed width 30 feet; surfacing 18 feet wide, 6 inches to 8 inches depth. Work by county forces; begun August 1, 1930. Expended to November 1, 1930, $1,667.43. Estimated cost, $3,849.70.

Gerrish Valley Market Road No. 7

West city limits Yamhill section, 0.12 mile grading and surfacing, Sta. 0 to Sta. 7+21.6; roadbed width, 26 feet; surfacing width, 18 feet, 8 inches deep. Work by county forces; begun July 18, 1930; completed August 15, 1930. Total cost, $850.59.

Baker Creek Market Road No. 9

Prosser Corner-Grenfell Barn section, 1.67 miles grading and surfacing, Sta. 151+20 to Sta. 236+95; roadbed width 27 feet; surfacing 12 feet wide, 8 inches depth. Work by county forces; begun July, 1929; completed October, 1929. Total cost, $8,558.07.

Sheridan-Mill Creek Market Road No. 13

Sheridan-Red Prairie section, 0.51 mile, regrading and resurfacing; Sta. 0 at Sheridan city limits to Sta. 27 at intersection Red Prairie market road; roadbed width, 26 feet; surfacing, 20 feet, 4 inches to 6 inches deep. Work by county forces; begun September 1, 1930; completed September 30, 1930. Total cost, $830.89.

Yamhill-Moore's Valley Market Road No. 14

Millers Ranch-Summit and Summit-Haskins Creek bridge. Grading Sta. 289 at Millers Ranch to Sta. 374 at Hoskins Creek, 1.61 miles; surfacing Sta. 14 at Millers Ranch to Sta. 374 at Hoskins Creek. 4.39 miles; roadbed width 24 feet; surfacing width 12 to 14 feet, depth 4 inches to 8 inches. Work by county forces; begun June 1, 1929; incomplete to November 1, 1930. Expended to November 1, 1930, $9,628.56.

Amity-West Market Road No. 15

Constructing one 20-foot bridge and fill approaches one-half mile west of Bredwell Station. Timber bridge on concrete abutments with fill and graveled approaches. Work by county forces; begun September 1, 1929; completed September 15, 1929. Total cost, $506.94.

Dayton-Wallace Road Market Road No. 16

Unionvale-Spaulding Ranch section, 1.42 miles grading and gravel surfacing; Sta. 234 to Sta. 309+20. Roadbed width 30 feet; surfacing width 16 feet; depth 4 inches to 8 inches. Work by county forces; begun June, 1929; completed November, 1929. Total cost, $2,698.48; market road funds $2,598.48; general funds $100.

Snider Bridge section, 0.27 mile grading and surfacing, Sta. 0, at east city limits of Dayton, to Sta. 4+85 and Sta. 7+81 to Sta. 17+03. Roadbed width 30 feet; surfacing 16 feet wide, 8 inches deep. Work by county forces Sta. 7+81 to Sta. 17+03; work by Rigdon Bros., contractors, Sta. 0 to Sta. 4+85. Work begun November, 1929; completed December, 1929. Total cost, $4,320.64; market road fund, $3,569.64; general fund for right of way, $751.

Snider Bridge, 296 lineal feet of pile trestle, Sta. 4+85 to Sta. 7+81. Bridge constructed 20 feet wide with an additional 4-foot sidewalk. Work by Nelson and Green, contractors. Work begun July, 1930; completed September, 1930. Total cost, $5,137.37.

The construction of the Snider Bridge and the grading of the approaches was a welcome improvement as it eliminated some very crooked road and an old worn-out bridge.

Newberg-Woodburn Market Road No. 17

North end of Willamette River Bridge at Newberg. 190 feet of grade and line change and placing asphaltic concrete pavement, 18 feet wide. Work by county forces; begun September, 1930; incomplete to November 1, 1930. Cost to November 1, 1930, $51.27. This short section will probably be paved in 1931 from Marion County paving plant at St. Paul.

Lafayette South, Market Road No. 18

Dayton Pavement-North three-quarters of a mile and Holdridge Gate-North, three-quarters of a mile; 1.5 miles resurfacing old macadam. Work by county forces; begun July, 1930; completed September, 1930. Total cost, $1,669.91.

Pike Market Road No. 20

Pike Cemetery section, 0.22 mile grading and surfacing, Sta. 0 to Sta. 12; roadbed width 24 feet to 30 feet; surfacing 12 feet wide, 5 inches deep. Work by county forces; begun July 24, 1930; incomplete to November 1, 1930. Expended to November 1, 1930, $1,450.53.

McMinnville, North Market Road No. 21

McMinnville city limits, 2 miles north, resurfacing 2 miles of old macadam. Work by county forces; begun July, 1930; completed August, 1930. Total cost, $1,508.28.

Chehalem Mountain Market Road No. 22

Oakley Dryer-Foot of Chehalem Mountain section, 1.60 miles of crushed rock surfacing, Sta. 72 to Sta. 157+67. Surfacing width 9 feet, 8 inches deep. Work by McVey and Poola, contractors; work begun July, 1929; completed September, 1929. Total cost, $4,075.02.

Red Prairie Market Road No. 23

Sheridan-Mill Creek section, resurfacing 1.04 miles, gravel resurfacing placed where needed. Work by county forces; begun July, 1929; completed September, 1929. Total cost, $1,500.23.

Sheridan South, Market Road No. 24

School House-Polk County line section, 1.66 miles grading and surfacing; Sta. 65 at School house to Sta. 154+01.5 at Polk County line. Roadbed width 24 feet; surfacing width 16 feet; depth 4 inches to 8 inches. Work by county forces; begun June, 1930; completed August, 1930. Total cost, $2,254.01.

Three-Mile Lane, Market Road No. 26

Ferry Street fill at west city limits of Dayton. Old timber bridge removed and fill made 30 feet wide. Work by county forces; begun October 1, 1929; completed November 1, 1929. Total cost, $2,341.01.

This fill replaced an old worn-out bridge at west city limits of Dayton. This will probably be paved within two or three years.

Yamhill River bridge at east city limits of Dayton. The old trestle approaches to the bridge were torn down and 874 feet of new pile trestle constructed, 18 feet wide. Work by county forces; begun September, 1929; completed December, 1929. Total cost, $12,933.35.

Star Mill Market Road No. 27

City limits-West section, 1.44 miles grading and surfacing, Sta. 6 to Sta. 76+99.3. Roadbed width 30 feet; surfacing 16 feet, 2 inches to 8 inches deep. Work by county forces; begun October 1, 1929; incomplete to November 1, 1930. Expended in 1929, $612.89; expended in 1930, $283.85. Total estimated cost, $2,114.40.

Bellevue-Delashmut Corner Market Road No. 28

Delashmut Corner-Chicken Coop School survey, Sta. 0 to Sta. 175+30. Expended 1929, $178.70; expended 1930, $48.92. Cost to November 1, 1930, $227.62.

Grand Island Market Road No. 29

Grand Island bridge, new deck placed on steel span and 360 feet of pile trestle bridge constructed, also fill approaches graded and graveled. Grading by county forces. Bridge constructed by Nelson and Green, contractors; work begun May 1, 1930; incomplete November 1, 1930. Expended to November 1, 1930, $12,176.29.

Sunny Crest Market Road No. 30

Sunny Crest section, 1.37 miles grading and surfacing, Sta. 0 at west city limits of Newberg to Sta. 89+49 at Sunny Crest Grange Hall. Roadbed width 30 feet; surfacing 16 feet wide. 2 inches to 8 inches deep. Work by county forces; begun June 15, 1930; completed September 15, 1930. Total cost, $3,340.50.

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